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CHARACTERISTICS OF ALBERTA'S HUNTERS 1974-1984

Alberta

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Fish and Wildlife Division

Resource Economics and Assessment
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CHARACTERISTICS OF ALBERTA'S HUNTERS

1974 - 1984

by

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EXECUTIVE SUMMARY

This report investigates the demographic changes in the licensed hunter population in Alberta from 1974 through 1984. Data presented here are derived from the Alberta Fish and Wildlife Division certificate and licensing system. During this period the numbers of hunters rose steadily and peaked in 1980. Since 1980 their numbers have dropped. These changes in the numbers of hunters may not be related to changes in the population size and composition of Alberta, but rather to changes in the attitudes of Albertans toward the sport of hunting.

The following points summarize the major findings of this study:

1. Wildlife Certificate sales in Alberta have been declining since 1980. Participation rates show that fewer eligible Albertans are hunting.

2. Although most Wildlife Certificate holders are men, small but steady increases in the number of women purchasing Wildlife Certificates have been noted.

3. The average age of hunters is increasing because fewer young people are purchasing Wildlife Certificates. The hunter population is aging on a more accelerated basis than the general population.

4. Changes in the regional distribution of Wildlife Certificate holders are few. The only significant changes are that the percentage of hunters

residing in the Edmonton area is declining while the percentage of hunters living in rural central Alberta is increasing. The number of hunters residing in Northern Alberta peaked in 1980.

5. Fewer urban dwellers are purchasing Wildlife Certificates while the percentage of rural hunters is increasing. Although the age distributions of these two populations is similar in any one year, analysis shows dissimilar patterns of change, suggesting that the rural and urban hunting populations are being affected differently with respect to influences on hunter participation.

6. The already small populations of non-resident and non-resident alien hunters have decreased since 1980.

7. As groups, women and men show different trends in the types of hunting licences they purchase. Women more often tend to purchase big game licences whereas men are more likely than women to purchase bird game licences.

8. Bird hunters are younger than big game hunters. Elk and moose hunters are older than other hunters.

9. Fewer hunters are buying bird game licences while more are buying big game licences. The number of hunters purchasing only one licence is decreasing.

These findings suggest that many hunters are no longer hunting, and that new people (mostly younger males) are not being introduced into this recreational activity. The growth of the metropolitan centres in Alberta, and the accompanying increase in urbanization may be affecting the attitudes of people toward hunting, particularly those in the younger age groups. However, the decline in participation in hunting is also seen in the younger people in rural areas. The reasons for this are not yet clear. Further investigation into the effects on Alberta of interprovincial migration of various age groups may help explain this decline.

In addition, other research suggests that with the general aging of the hunter population and the increased participation by less dedicated elements of the general population, Alberta's remaining active hunters may become less active and may spend less time and money on their hunting activities. Therefore the changes in the numbers and characteristics of Alberta's hunters warrant our attention.

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INTRODUCTION

Traditionally, management agencies have concentrated on understanding the dynamics and abundance of various of renewable resources. However, it is becoming clear to many professionals that a better understanding of users of resources such as fish and wildlife is a factor contributing to the improvement of many resource management programs. For example, a lack of understanding of user behavior has been implicated as a factor in the gradual decline of the Pacific Ocean commercial fishery, caused mainly by overfishing. Emphasis on understanding the attitudes of fishermen and the dynamics of the fishing fleet rather than the biology of fish may have prevented this decline (see CSEB Newsletter Vol. 42(1), p. 56). The relatively widespread consumptive use of wildlife is usually implicated by the public as a major factor in the visible decline in numbers of many game species. Market hunting may have caused the extinction on either a local or continental basis of numerous wildlife species in North America (e.g. bison, Passenger Pigeon). However, it is arguable that an understanding of the numbers, attitudes and activities of hunters may have prevented a number of these extirpations.

Lack of knowledge about North American hunters results in the loss of stature of the hunter in the eyes of the non-hunting public (Klein 1973). The association of hunting with crime, war and violence, as well as emotional attitudes toward nature in general, have led some anti-hunters to label hunting as "evil for evil's sake" (Krutch 1957:9). Some authors acknowledge, however, that hunting is only one example of the use of wildlife by humans, but that the visibility of its impact is what apparently generates vigorous opposition by well-defined segments of the North American public (e.g. Klein,

1973). Research by Shaw (1977) and Kellert (1978) show that the anti-hunting sector contains a large number of people who have low knowledge about animals and includes a disproportionately large number of women. Opposition to hunting is also closely related to urbanization.

Numerous attempts have been made to explain the motivation behind hunting wildlife. The need for explanation of this activity lies in the fact that, in most cases, hunting is no longer required for the provision of food for the family or community. Hunting now is primarily a form of outdoor recreation for the vast majority of participants. Support for this classification of hunting has come from a number of U.S. studies (e.g. More 1973; Langenau et al 1981; Kennedy 1974), where factors such as comradeship, getting out-of-doors and challenge are just as important as harvest success in measuring the satisfaction of the hunt.

Since the late 1960s, there has been a dramatic increase in the participation of Albertans in outdoor recreational activities (Lanier 1983). Despite the fact that hunting involves few people relative to other sports activities, sales of hunting licences have increased over time, a fact which can be misinterpreted (Lanier 1983). However, unlike many other forms of recreation, the absolute numbers and demographic characteristics of hunters have not been investigated in Alberta. This is fruitful ground for research given the dramatic changes in the population of Alberta in the 1970s and 1980s due to rising and falling economic conditions relating to the petroleum industry.

Few studies of hunting in North America focus on the characteristics and attitudes of hunters (for reviews see Schole 1978; Hendee and Potter 1976). This is surprising in that changes in the socio-demographic characteristics of hunters could provide information on changes in the

attitudes of hunters toward wildlife management programs and thus influence the activities of wildlife management agencies. For example, Peterle (1967, 1977), in a thorough study on hunter characteristics and attitudes in Ohio, found that as hunters became older they were less interested in hunting, less successful at killing game, and less sympathetic toward scientific wildlife management programs. These findings, if applicable to other areas of North America, have important implications to agencies responsible for managing wildlife.

Most other studies dealing with hunter characteristics have been static in nature, revealing little information on temporal changes in the population of hunters (Applegate 1977; Langenau and Mellon 1980). Applegate (1977) describes the typical format of these studies as tabulations of "standard socio-economic and demographic parameters". His own research, however, involved the dynamic nature of the New Jersey hunter population using the approach wildlife biologists use in the classical analysis of animal populations. Applegate was able to present a life table and "survival" curve for hunters in New Jersey and considered "natality" and age specific "mortality" rates in the analysis. "Life" was simply the years of active participation in hunting; "birth and death" were the initiation and cessation of hunting respectively. Using these concepts, Applegate found that younger hunters were decreasing in number and that an increasing number of New Jersey's hunters were hunting out of the state.

In our opinion, Applegate's findings identify the usefulness of investigating changes in hunter populations. However, Applegate's study and virtually all other detailed studies of hunter characteristics, concern hunters in the United States. It is suspected that the characteristics and attitudes of Canadian hunters are different from those in the U.S. due to

reduced human densities; the quality and variety of wild landscape; and the high diversity of game animals. This is particularly true in Alberta where only 2.3 million people live in an area 32 times the size of New Jersey, a state with 7.4 million people. This identifies the need to investigate patterns in the changes of socio-demographic characteristics of hunters in Alberta.

This preliminary study investigates patterns in the demography of licensed hunters in Alberta from 1974 to 1984. Unlike similar U.S. research, it does not use a sample survey of licensed hunters as an information base, but analyses the entire licensed population. This eliminates response and non-response bias from the analysis, both of which have been found to affect the results of studies using sample surveys of licensed hunters (Applegate 1977).

Study Description

To hunt birds or large mammals in Alberta, one must be at least 14 years of age and have purchased a Wildlife Certificate. This enables an individual to purchase any number of species specific hunting licences or to apply for various special licences issued through a lottery process or special draw. Alberta Fish and Wildlife Division maintains a computerized file of both certificate and licence holders containing the buyer's name, address, age, sex and residence code. Residence codes are assigned based upon each hunter's place of residence at the time of purchasing the certificate. Resident Albertans are assigned one of 10 codes with 1 to 4 representing Edmonton, Red Deer, Calgary and Lethbridge, respectively. The remaining six codes represent broad geographical areas of the province (Figure 1). Although these include population centres with upward of 10 000

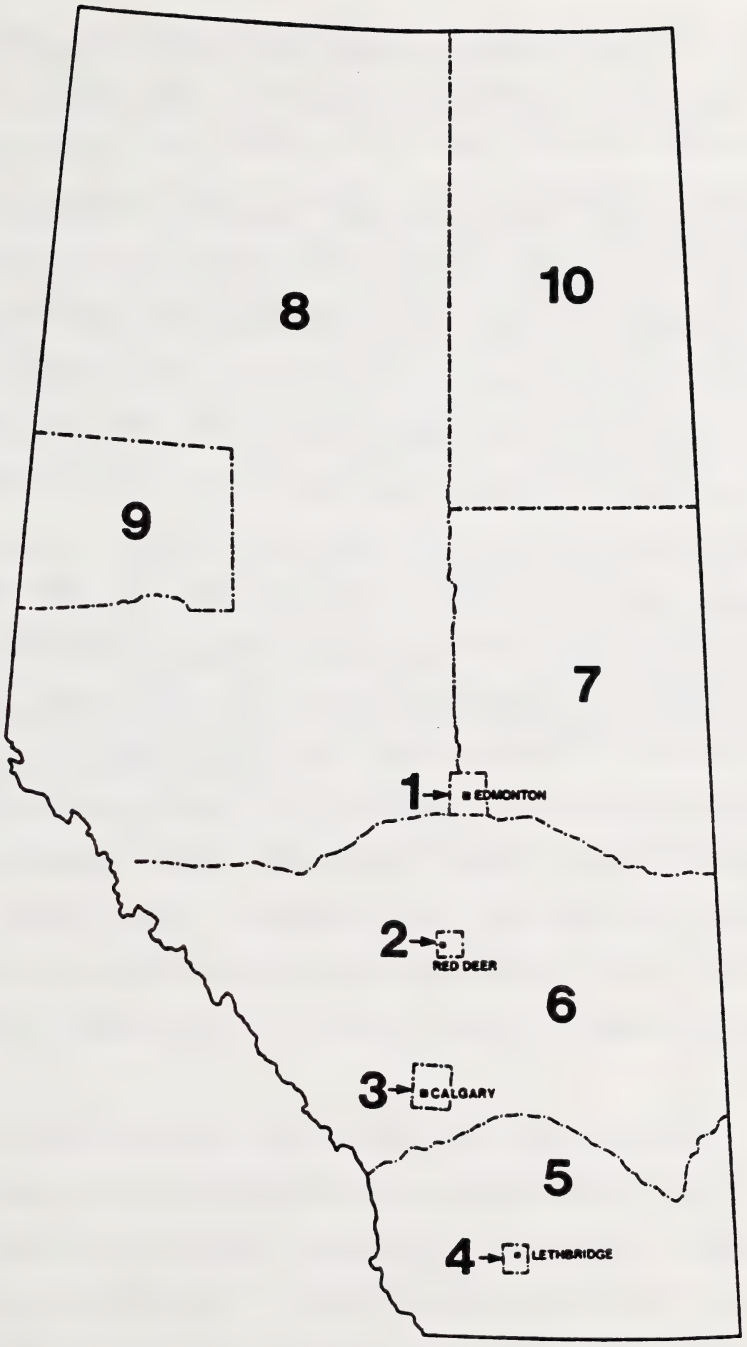


FIGURE 1. Fish and Wildlife Residence Codes used in the certificate licensing system.

people (e.g. Grande Prairie), for this study these areas are considered rural as little effort is required by residents to reach hunting sites. The areas designated by residence codes 1 to 4 include small villages and acreages which may be considered rural. We have, however, considered only the populations of selected centres in these areas (e.g. St. Albert) to represent the urban component of the Alberta population (see Appendix 3 for more details). Those certificate holders who are non-Albertans or non-resident hunters are assigned a code that refers to their home province, if Canadian; state if from the U.S.A.; or country, if living outside Canada (non-resident alien).

This study investigates information available from annual computer licence files including patterns in the sex, age (14-year-old licence holders were excluded from the analysis due to their small numbers) and geographic distributions of Alberta's hunters from 1974 to 1984. This study is restricted to this 11-year period as it is the only period for which complete information exists. Changes in attitudes, income, occupations, hunting practices, and other activities of Alberta's licensed hunters are not analysed. However, speculations about these variables based upon research in the U.S. and observed trends in Alberta will be offered in appropriate places.

In addition, this investigation is limited by the fact that all Wildlife Certificate holders are not necessarily active hunters although they are legally entitled to be. Nor are all hunters certificate holders. Nearly all general population survey estimates of participation in hunting are higher than licence sales, pointing to the possible existence of an unlicensed component of the total hunter population which would not be included in this study. In addition, Treaty Indians and hunters of small

mammals such as rabbits, gophers and squirrels are not required to purchase a certificate or any other type of licence in Alberta and are therefore not included in the analysis.

Data presented in this report have been derived from the Alberta Fish and Wildlife Division's certificate and licensing system. These data have been compiled into detailed tables which can be found in Appendices 1 and 2. Tables and figures included in the body of the report are simplified summaries of these compilations. For reference purposes, the appropriate appendix tables are referred to in the report headings and sub-headings.

This study is exploratory and does not have rigidly defined objectives or hypotheses. The purpose of this report is to provide a much needed examination of the Alberta hunting population. It is also hoped that this report will promote interest into further socio-demographic research of the hunting fraternity in the future.

CHANGES IN THE NUMBERS OF LICENSED HUNTERS

Some sectors of society believe that hunting is attracting more individuals in Alberta. Lanier (1983) supports this view and states that the numbers of hunting licences issued in Alberta increased significantly during the mid-70s. This increase was reportedly related to a widespread increase in the participation of Albertans in outdoor recreation in general. However, there are two factors which influence the validity of this perceived trend in hunting activity. Firstly, although there was an increase in the numbers of licences sold, from 1974 to 1979 (Lanier 1983:7) there was also a parallel increase in the population of Alberta over the same time period (Table 1). Thus, the rate of resident participation in hunting relative to overall population trends in Alberta has yet to be examined.

The second factor relates to the licensing system employed by the Alberta Fish and Wildlife Division. Each hunter can purchase more than one licence. Possession of a licence only permits the hunting of a single species or species group (e.g. game birds). Thus the numbers of licences sold may not be representative of the number of individuals hunting wildlife in Alberta. In other words, this factor may tend to exaggerate the level of hunter participation from that which, in fact, exists.

The most accurate estimate of the number of licensed hunters in Alberta comes from the sales of Wildlife Certificates. As stated earlier, certificates are required by individuals who wish to purchase licences. A review of sales records of certificates revealed that the numbers sold increased from 120 962 in 1974 to a high of 166 467 in 1980, and since have dropped steadily to 148 886 in 1984 (Table 1). In addition, the percentage of the eligible Alberta hunting population (Alberta residents 15 years of age

TABLE 1
Number and Percentage of Certificate Holders by Type
1974 - 1984

CERTIFICATE TYPE	YEAR											Average Percentages
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	
Alberta Residents	112 120 (92.7)	116 203 (93.4)	127 506 (93.2)	141 773 (94.2)	148 721 (94.7)	152 744 (94.6)	158 996 (95.5)	158 197 (95.8)	156 349 (96.2)	155 304 (96.1)	143 298 (96.2)	95.0%
Non-residents	5 307 (4.4)	5 565 (4.5)	5 899 (4.3)	5 963 (4.0)	5 590 (3.6)	5 727 (3.5)	4 452 (2.7)	3 992 (2.4)	3 774 (2.3)	3 770 (2.3)	3 304 (2.2)	3.1%
Non-resident Aliens	3 535 (2.9)	2 597 (2.1)	3 372 (2.4)	2 791 (1.9)	2 744 (1.7)	2 985 (1.8)	3 019 (1.8)	2 936 (1.8)	2 440 (1.5)	2 471 (1.5)	2 284 (1.5)	1.8%
Total Certificate Sales	120 962 (100.0)	124 365 (100.0)	136 777 (100.0)	150 527 (100.0)	157 035 (100.0)	161 456 (100.0)	166 467 (100.0)	165 125 (100.0)	162 563 (100.0)	161 545 (100.0)	148 886 (100.0)	100.0%
Alberta Population	1 221 000	1 276 400	1 334 910	1 406 000	1 473 600	1 538 200	1 614 600	1 696 055	1 763 900	1 795 500	1 789 800	--
Percentage of Eligible[1] Population Who Are Certificate Holders	9.2%	9.1%	9.6%	10.1%	10.1%	9.9%	9.8%	9.3%	8.9%	8.6%	8.0%	9.3%

Note: 1. All figures refer to population 15 years of age and older.
Percentages are calculated on basis of Alberta Residents only.

or older) who purchased certificates, has decreased 2.1% (10.1% in 1977 to 8.0% in 1984; Table 1) over the period under review. Thus, the participation of Albertans in hunting has actually declined since the late 1970s.

This decline is also evident in the non-resident component of the hunting population. In 1974 about 7% of all certificate holders were non-Albertans (Table 1). In 1984 only 3.7% of certificate holders lived outside the province, a drop of approximately one-half the 1974 percentage.

The general decline in both the absolute number and participation rates of hunters could be related to a number of factors. It is probable, however, that the changing demography of the Alberta population is not directly responsible for this decline. In order to focus in on "who is or is not hunting", an investigation of the known components of Alberta's hunting population as extracted from the certificate/licensing system is required. The age, sex and geographical distributions of Alberta's Wildlife Certificate holders and the changes in these components over time are described in detail in the following sections.

DESCRIPTIONS OF THE CHANGING HUNTER POPULATION

Sex Distribution - (Appendix 2)

In each of the years investigated, men greatly outnumbered women in the hunting population. In fact, over the 11-year period, an average of 95.6% of certificate holders were men (Table 2). Although remaining substantially outnumbered, the population of women hunters has been steadily increasing over time (Table 2; Figure 2). In 1974, 3 514 or 3.1% of all Alberta's resident hunters were women. By 1984, women represented 5.7% of resident hunters; an increase of 2.7% to 8 347 hunters.

The numbers of men and women hunters in each of the various years studied were significantly different (Table 2). Post hoc multiple comparisons (see Marascuilo and McSweeney 1977: 141-147) identified that the significant increase in women hunters began in 1979 and that overall, there was a significant, positive linear relationship in the proportion of women purchasing certificates over time (Figure 2). Further investigation of this trend (time series analysis) is not possible as not enough years of data exist.

Throughout the remainder of this report the total hunting population is used to illustrate any changes in the numbers of male hunters. This method was chosen because women comprise such a small portion of the hunting population. However, where significant differences between the sexes exist, males are analysed separately.

Age Distribution - (Tables A and B)

The unique age structure of hunting populations has been well documented in the United States (e.g. Hendee and Potter 1976) and in Canada

TABLE 2

Sex Distribution of Alberta Resident Hunters: Number and Percentage

1974 - 1984

SEX	YEAR											Average Percentages
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	
Male	108 606	112 324	122 532	135 647	142 739	145 894	151 511	150 055	148 642	147 112	134 950	
	(96.9)	(96.7)	(96.1)	(95.7)	(96.0)	(95.5)	(95.3)	(94.9)	(95.1)	(94.7)	(94.2)	95.6%
Female	3 514	3 879	4 967	6 125	5 987	6 850	7 482	8 141	7 707	8 187	8 347	
	(3.1)	(3.3)	(3.9)	(4.3)	(4.0)	(4.5)	(4.7)	(5.1)	(4.9)	(5.3)	(5.8)	4.4%
Total	112 120	116 203	127 499	141 780	148 726	152 744	158 993	158 196	156 349	155 299	143 297	
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	100.0%

Differences in the numbers of male and female hunters: significant, $p < 0.001$.

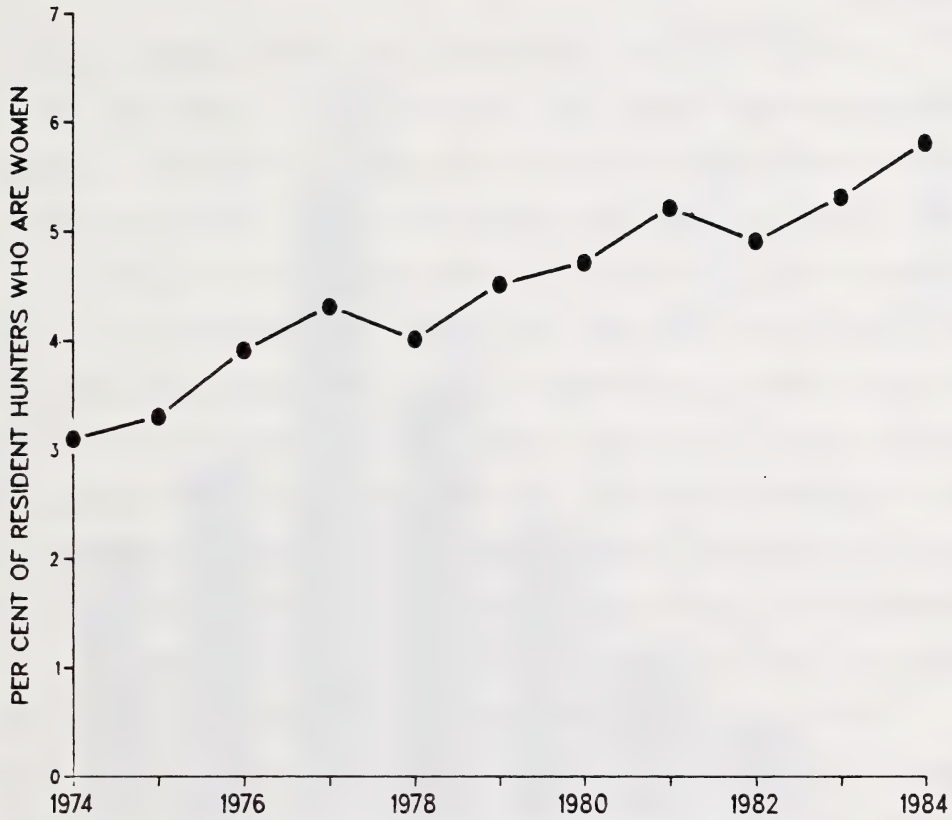


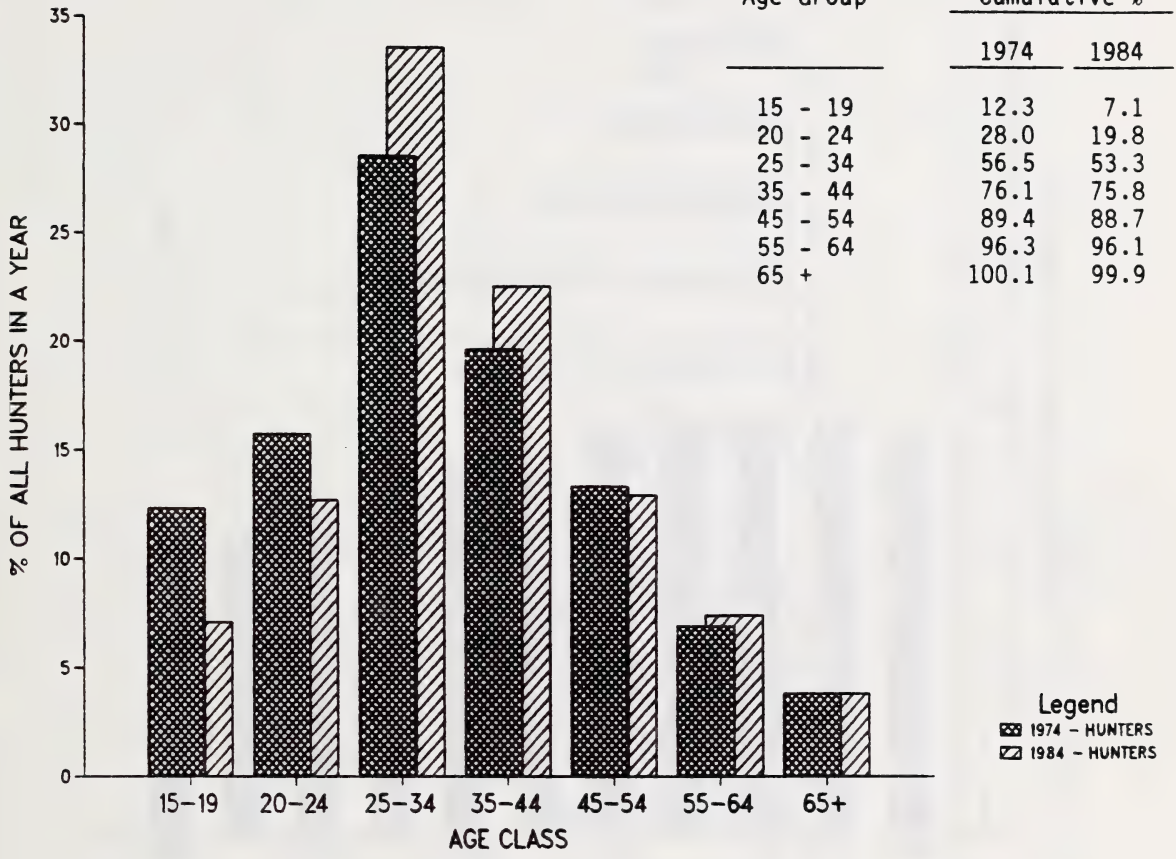
FIGURE 2: Women hunters as percentage of Resident Wildlife Certificate holders, 1974 to 1984.

(Filion et al 1983). In this study it was observed that over the 11-year period more than 75% of Alberta Resident Wildlife Certificate holders were under 45 and that more than half of Alberta's hunters were less than 35 (Figure 3).

Although the hunting population in the province appears to be quite young, it has actually been aging over time. In 1974 about 12% of all resident hunters were in the 15 to 19 age category (Figure 3). By 1984, the contribution of this age group dropped to 7.1%, the lowest percentage recorded in the 11-year period. Resident hunters 20 to 24 years of age represented 15.7% of the hunter population in 1974 and only 12.7% in 1984. This aging trend is illustrated in Figure 4 where the two age groups are combined into a "young" hunter category. In 1977 young individuals comprised 30% of the hunter population. Since 1977 this group's contribution to the hunting population has dropped steadily to a low of about 20% in 1984. The difference in the contribution of these age groups to the hunting population between 1974 and 1984 is statistically significant ($p < 0.001$).

Over the same period the percentage of 25- to 34-year-olds in the resident hunter population increased 5% (28.5% to 33.5%) while the 35 to 44 age group increased 2.9% (19.6% to 22.5%; Figure 3). Relatively little change was noted in the remaining age groups during this period.

A re-examination of these data in light of changes in the age structure of Alberta's entire population (Figure 5) produced further evidence of an aging trend in the hunter population. Figure 5 shows the age distributions of the general Alberta population and the licensed hunter population for these two years. Census data from 1976 and 1981 were used to establish an expected age distribution of hunters. Expected numbers of hunters in each age group were calculated by multiplying the proportion of an



Age Group	Cumulative %	
	1974	1984
15 - 19	12.3	7.1
20 - 24	28.0	19.8
25 - 34	56.5	53.3
35 - 44	76.1	75.8
45 - 54	89.4	88.7
55 - 64	96.3	96.1
65 +	100.1	99.9

FIGURE 3: Age of Resident Wildlife Certificate holders (1974 and 1984).

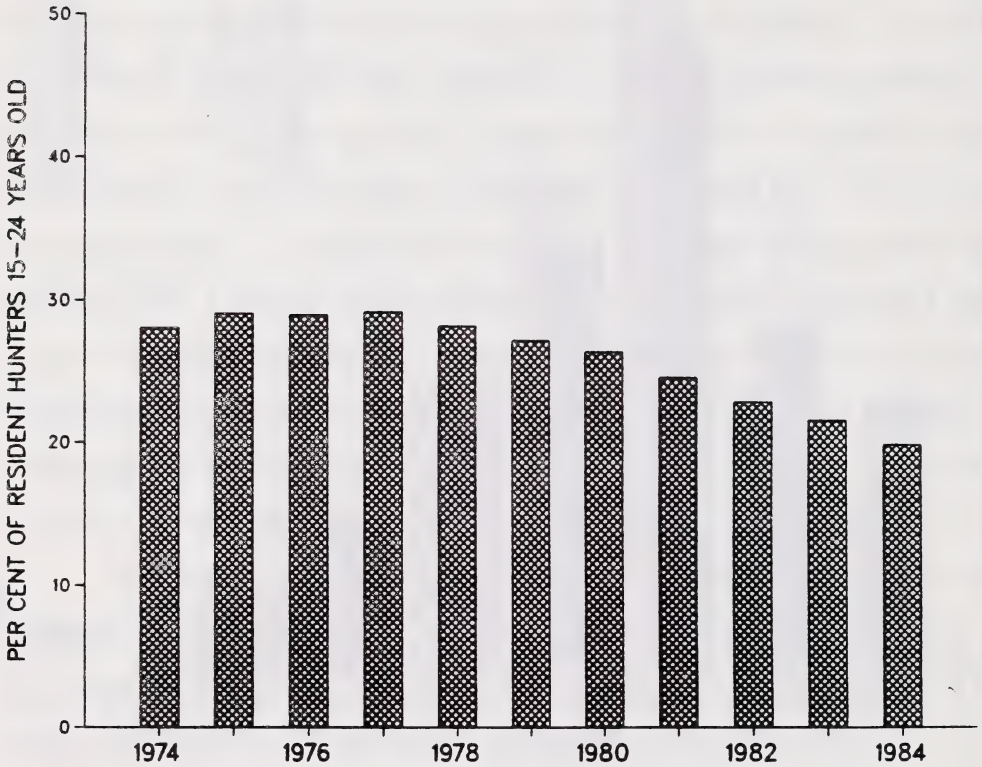


FIGURE 4: Resident Wildlife Certificate holders 15 to 24 years of age (1974 to 1984).

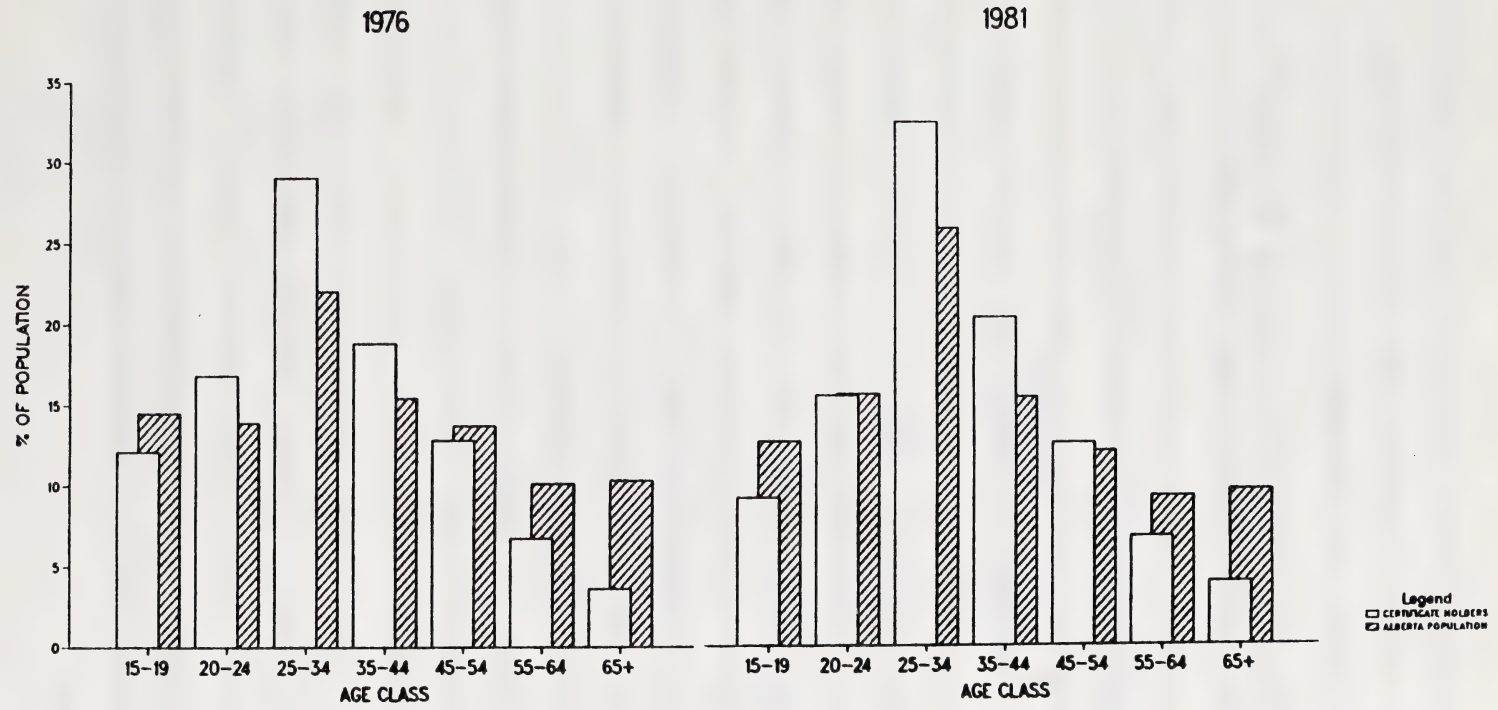


FIGURE 5: Age distributions of Resident Wildlife Certificate holders and the Alberta population in 1976 and in 1981. (Age distributions of Resident Wildlife Certificate holders and the Alberta population in 1976 and 1981 are significantly different, $p < 0.001$).

age group in the general Alberta population by the total number of hunters in each year. The hypothesis tested was that the age distribution of hunters and that of the general population were the same in 1976 and 1981. The expected and hunter age distributions for each of the two census years were significantly different (Figure 5). However, these differences may be explained by changes in the age distribution of the provincial population. In order to investigate this possibility, the number of hunters in each age group for 1976 and 1981 were divided by their respective expected frequency (Table 3). The resulting calculations (Table 3) reinforce the hypothesized aging trend in the resident hunter population. The degree of under-representation of young people in the hunting population actually increased from 1976 to 1981, or, in other words, the proportion of the general population in the younger age groups participating in hunting wildlife grew smaller than that which should be expected (Table 3). The participation of the older age groups increased over time. Unfortunately, as census data are not available after 1981, this type of analysis cannot be performed on the entire range of years under investigation.

When the age distribution of women resident hunters is considered separately, a somewhat different picture emerges. For example, the number of women in each age group increased from 1974 to 1984. The largest increase occurred in the 35 to 44 age group which had 5.1% more women hunters in 1984 than 1974 (Figure 6). However, an aging trend similar to that observed in the entire resident hunter population (which is composed mainly of men), was also noted for women resident hunters; the middle age groups increased their proportionate representation largely at the expense of the younger age groups.

TABLE 3

INDICES OF REPRESENTATION BY THE ALBERTA POPULATION IN HUNTING AND CHANGES OVER TWO CENSUS YEARS.[1]

AGE	ALL RESIDENT CERTIFICATE HOLDERS			WOMEN RESIDENT CERTIFICATE HOLDERS		
	1976	1981	PERCENTAGE CHANGE	1976	1981	PERCENTAGE CHANGE
15 - 19	0.831	0.720	-11.1	0.401	0.359	-4.2
20 - 24	1.212	0.992	-22.0	1.422	0.974	-44.8
25 - 34	1.319	1.254	-6.5	1.591	1.458	-13.3
35 - 44	1.221	1.323	+10.2	1.433	1.618	+18.5
45 - 54	0.937	1.038	+10.1	0.831	1.044	+21.3
55 - 64	0.665	0.733	+6.8	0.518	0.579	+6.2
65+	0.354	0.404	+5.0	0.135	0.176	+4.1

[1]Indices were calculated by:

$$\frac{a_x \, b_x}{c_x}$$

where a = proportion of an age group in the provincial population in year x.
b = total number of hunters in year x.
c = number of hunters in that age group for year x.

A result of one means that the proportion of the age group is the same in the hunter population and the general population. Values less than one signify that the age group is under-represented in the hunter population. Values greater than one mean over-representation.

Age Group	Cumulative %	
	1974	1984
15 - 19	6.1	4.1
20 - 24	24.3	15.8
25 - 34	59.3	54.1
35 - 44	80.4	80.3
45 - 54	92.9	93.0
55 - 64	98.4	98.2
65 +	100.1	100.9

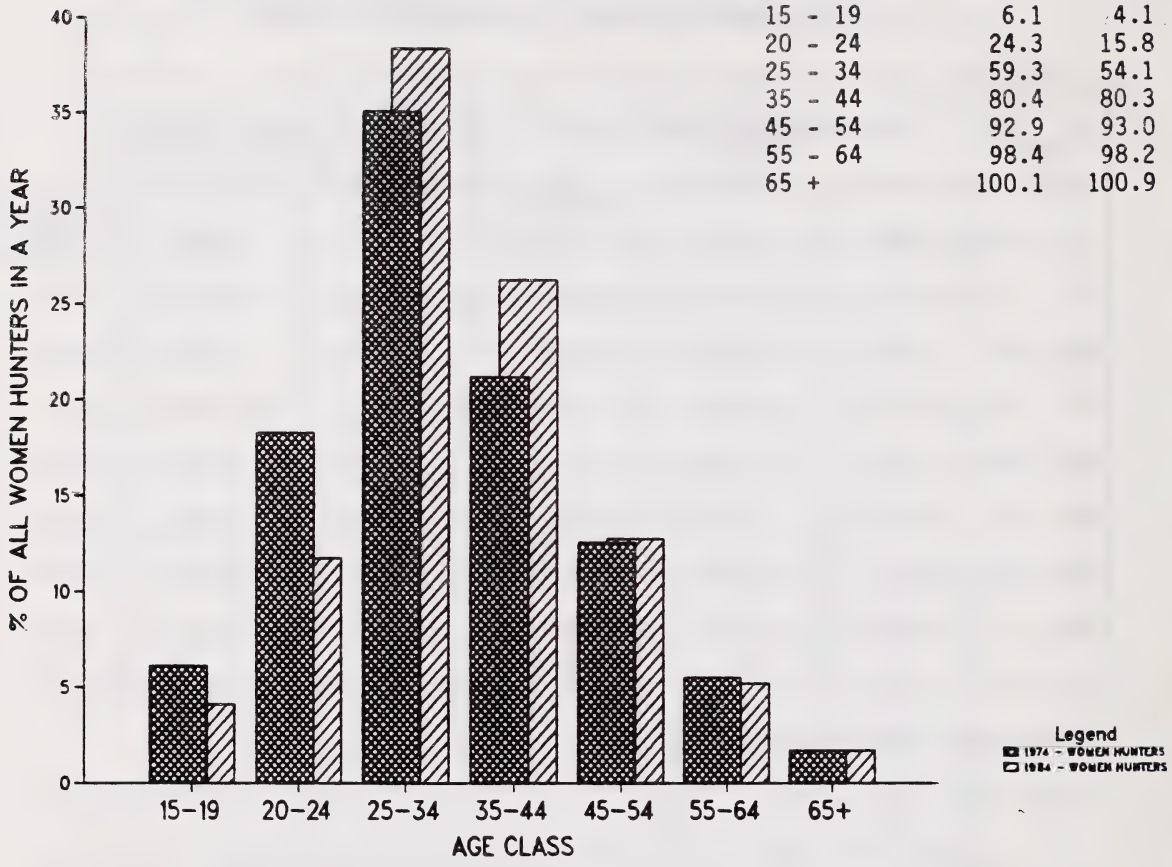


FIGURE 6: Age of Women Resident Wildlife Certificate holders (1974 and 1984).

The pattern of change in the participation of all the various age groups of women hunters from 1976 to 1981 was also similar to that of all resident hunters (Table 3). In most cases, the respective increases or decreases were about double that of all resident hunters. These exaggerated changes can probably be attributed to the fact that the very small number of women hunters was compared to the total number of women in the province. In such cases, even small changes can appear significant. Caution should be used in interpreting these figures.

Regional Differences: Residence Codes - (Tables C and D)

In 1984, residents of rural central Alberta (residence code 6) comprised the largest percentage of Wildlife Certificate holders in Alberta with 27 374 individuals or 19.1% of all hunters (Figure 7). Edmonton and surrounding area (residence code 1) contributed the next largest group of hunters at 18.3% of the total, followed by Calgary (residence code 3) with 15.8%.

During the 11 years investigated, only the Edmonton area experienced a substantial decline in its contribution to the resident hunter population from 25% in 1974 to 18.3% in 1984 (Figure 7). In all but the last year of this period more resident hunters were from the Edmonton area than any other area of the province.

The only area to sustain an important increase in its proportionate contribution to the hunter population was central Alberta (residence code 6). This area, accounting for only 16.6% in 1974, contained the largest population of resident hunters in the province in 1984 at 19.1% of the total.

The percentage of resident hunters in north-western Alberta (residence codes 8 and 9) increased from 11.0% and 7.3% to highs of 12.9% and 8.9% in

Residence Code	Percentage of Resident Hunters		
	1974	1984	Average
1	25.0	18.3	21.5
2	2.1	2.4	2.3
3	17.3	15.8	16.0
4	2.3	2.3	2.2
5	8.3	9.2	8.6
6	16.6	19.1	17.5
7	10.1	10.7	9.9
8	11.0	12.3	12.1
9	7.3	7.7	8.0
10	0.0	2.2	1.9

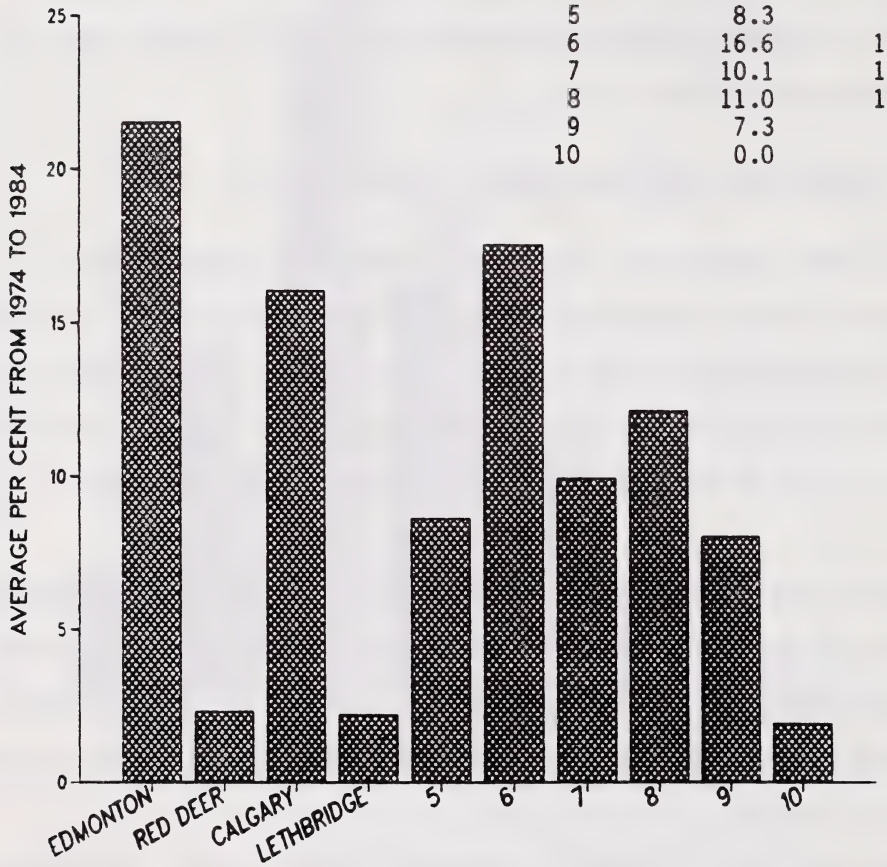


FIGURE 7: Resident Wildlife Certificate holders in the province's 10 residence codes, (average percentages, 1974 to 1984).

1981 respectively and have decreased to 12.3% and 7.7% since that time. The remaining areas experienced little relative change over the 11 years.

Regional Differences: Rural Versus Urban - (Tables C and D)

Resident hunters from Alberta's four major urban centres comprised 38.8% of the resident hunter population in 1984 (Figure 8). This represents a drop of 7.9% from 1974, with the sharpest declines between 1974 and 1979 and between 1982 and 1984. The percentage of rural hunters correspondingly increased between 1974 and 1979 and again between 1982 and 1984. In 1984, 61.2% of Alberta's resident hunters lived in what are defined in this study as rural areas. The differences in the contribution of these two groups to the hunting population are statistically significant ($p < 0.001$; Table C).

The major contribution to the increase of rural hunters came from the northern region of the province (residence codes 8, 9 and 10). The contribution from this area peaked at 24% in 1980 and has since dropped to 22.2% in 1984. The proportion of rural hunters from the south-central region (residence codes 5, 6 and 7) increased slightly since 1980 and in 1984 represented 39% of all Alberta resident hunters.

Women resident hunters were more likely to be rural residents than men. In 1984, 67.7% of women resident hunters were from rural areas.

Regional Differences: Age - (Table E)

The patterns of the age distributions of rural and urban hunters were generally similar in any one year (eg. Figure 9). The modal age category for each group was 25-34 years. However, urban hunters aged 15-19

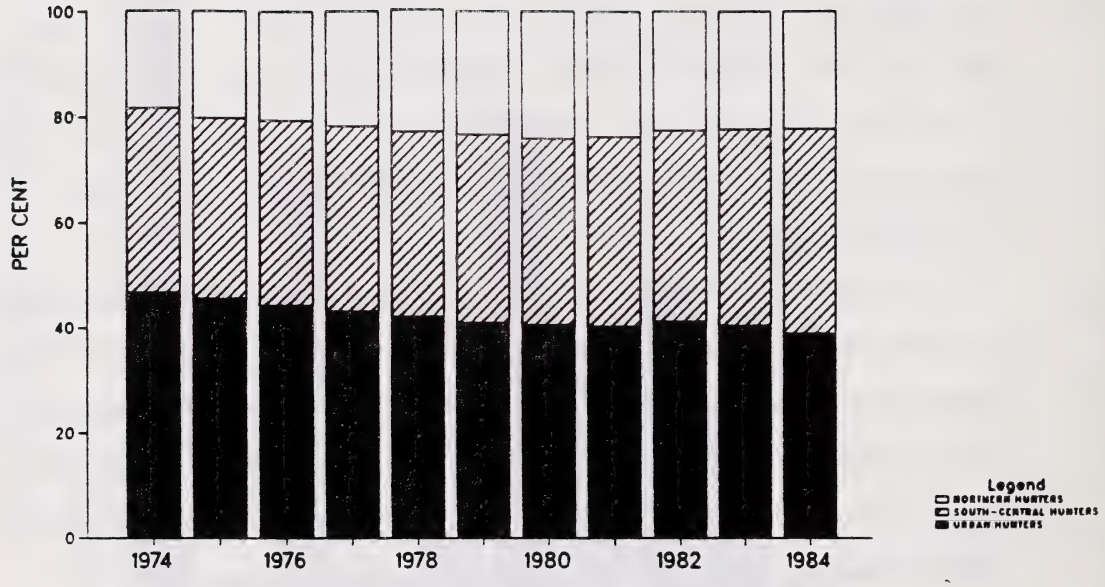


FIGURE 8: Resident Wildlife Certificate holders living in rural northern Alberta, rural south-central Alberta and Alberta's urban areas (1974 to 1984).

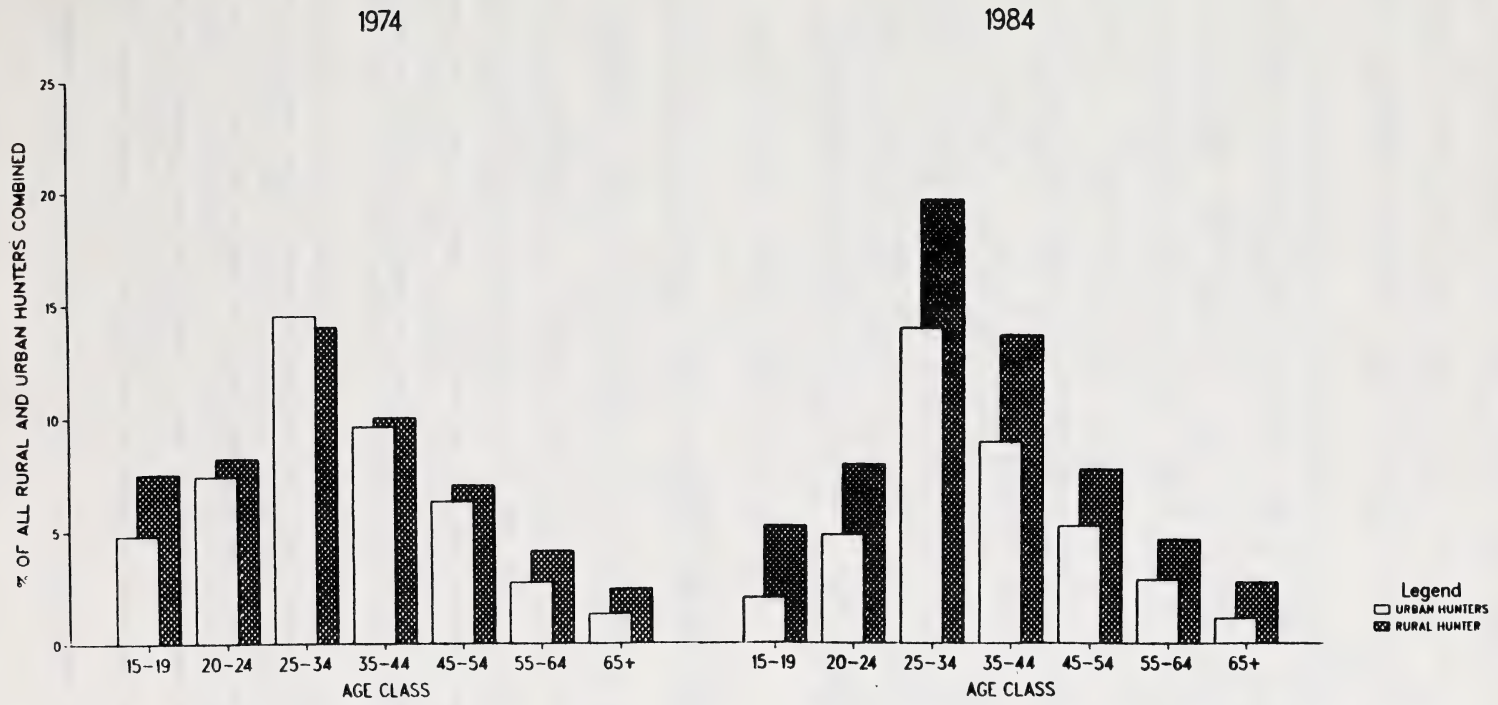


FIGURE 9: Rural and Urban Resident Wildlife Certificate holders by age (as percentage of all Resident Wildlife Certificate holders, 1974 and 1984).

were never more numerous than 4.8% of the entire hunter population in any year, while rural hunters aged 15-19 years were about twice as numerous. It would seem that the majority of Alberta's youngest hunters do not live in the large cities.

From 1974 to 1984 the age distributions of rural and urban hunters changed in different ways (Figure 9). The percentage contribution of the 15-19 age group decreased at almost the same rate in both rural and urban areas during the 11-year period (2.8% and 2.3% respectively; Figure 9). Urban hunters aged 20-24 years decreased 2.6%, more than eight times the rate of decrease for rural hunters of the same ages. In the 25 to 34 and 35 to 44 age groups the percentage of rural resident hunters increased by 3.6% and 0.7% respectively. Urban hunters in these groups decreased by 0.7% and 1.1% respectively. Changes in the other age groups were negligible.

Renewal of Wildlife Certificates

One important aspect in the examination of hunter demography over time concerns the frequency of licence renewal. Information on licence renewal rates from year to year over a long term may indicate the consistency with which hunters participate in recreational hunting and also shed light on the extent to which new hunters are being introduced to this recreational activity.

In order to investigate the nature of certificate renewals over various periods of time, the surnames and birthdates of certificate holders from a given year were checked in other years for reoccurrence on the file. Matches from year to year provide an indication of licence renewal for the licensed hunting population. For ease of presentation, some renewal rates

are summarized in Table 4. Early in the period under investigation about 58% of certificate holders in 1974 renewed their certificate the following year, 1975 (Table 4). From 1978 to 1979 the rate of renewal increased to about 63%, and from 1983 to 1984 it dropped to about 61%. Over the entire period 37.5% of certificate holders in 1974 purchased certificates again in 1984.

Hunters in the younger age groups (15-24 years) exhibited lower renewal percentages than hunters in older age groups (25-64 years). In addition, the renewal percentages for young hunters for 1983 to 1984 is lower than for 1974 to 1975. These young hunters are the only groups to show renewal rates lower for the period 1983 to 1984 than earlier periods. Hunters aged 35-44 years had the highest renewal percentages for any combination of years. This may reflect the fact that these hunters are likely to be non-transient, stable income earners and can allot time for recreational hunting each year. Hunters in the over-55 age group had the lowest percentages of renewal over long time spans.

Non-resident and Non-resident Alien Hunters - (Table F, Appendix B)

During the 11-year period studied, the majority of people who held Wildlife Certificates were also Alberta resident hunters. In fact, in 1984, resident hunters comprised 96.2% of all Alberta's Wildlife Certificate holders (Table 5). This represents a 3.5% increase from 1974. Most of this increase occurred at the expense of the Canadian component of the non-resident hunting population which dropped 2.2% during the study period. Most of Alberta's non-resident hunters resided in British Columbia. In 1984, this segment represented 1.3% of Alberta's Certificate holders compared to only 0.8% from the rest of Canada (Table 5).

TABLE 4

RENEWAL RATES:
PERCENTAGE OF ALBERTA CERTIFICATE HOLDERS IN A GIVEN YEAR
WHO RENEWED IN A SUBSEQUENT YEAR

AGE IN EARLIEST YEAR	CALCULATED YEAR TO YEAR RENEWAL RATES (%)				
	1974 to 1975	1974 to 1984	1978 to 1979	1978 to 1984	1983 to 1984
15-19 years	57.7%	38.8%	60.0%	40.7%	56.5%
20-24 years	58.0%	39.9%	59.3%	41.4%	56.8%
25-34 years	58.8%	40.1%	64.0%	44.5%	61.3%
35-44 years	59.9%	38.9%	65.5%	45.7%	64.3%
45-54 years	58.6%	39.6%	64.5%	44.0%	63.3%
55-64 years	58.1%	29.0%	63.0%	39.3%	60.1%
65 years or more	53.8%	11.9%	58.1%	22.4%	57.1%
All Certificate Holders	58.5%	37.5%	62.7%	42.5%	60.8%

TABLE 5

THE FREQUENCY OF CERTIFICATE HOLDERS BY RESIDENCE CATEGORY

	NUMBER AND PERCENTAGE OF CERTIFICATE HOLDERS			
RESIDENCE	1974		1984	
Alberta Residents	112 120	(92.7)	143 298	(96.2)
Non-residents	5 307	(4.4)	3 304	(2.2)
British Columbia	3 971	(3.3)	1 966	(1.3)
Prairie Provinces	592	(0.5)	622	(0.4)
Central Canada	537	(0.4)	470	(0.3)
Atlantic Provinces	32	(0.0)	60	(0.0)
Territories	175	(0.1)	186	(0.1)
Non-resident Aliens	3 535	(2.9)	2 284	(1.5)
United States	3 466	(2.9)	2 101	(1.4)
Other Countries	69	(0.1)	183	(0.1)
Total	120 962	(100.0)	148 886	(100.0)

The number of non-Canadian or non-resident alien hunters also decreased; from 2.9% of Alberta certificate holders in 1974 to 1.5% in 1984. Of all countries, most non-resident alien hunters came from the United States, although over the 11-year period never more than 3 535 hunters (1974) originated there.

Non-resident or non-resident alien hunters were more likely to be male (Appendix B) and were generally older than Alberta resident hunters. Most of the non-resident hunters were in the 35 to 44 age group (Appendix B). In addition, non-resident hunters hunting in Alberta appear to represent an older segment of their "home" hunting population. For example, the distribution of British Columbian hunters hunting in Alberta shows a disproportionately high contribution of the older age groups when compared to the age distribution of British Columbian hunters hunting as residents in British Columbia (Figure 10).

Changes in Licence Sales 1980-1984 - (Tables G and H)[1]

Owing to differences in the structure of computer files, licensing data from 1974-1979 could not be investigated. However, since the number of hunters peaked in 1980, this section will deal with the period during which

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[1]In this section only five licence categories will be examined: General Elk, General Mule Deer, General Moose, General White-tailed Deer and Bird Game. The Fish and Wildlife Division has some influence on the demand for big game licences through limited entry draws. It is expected that this influence is most significant for elk and least significant for white-tailed deer. However these draws are not expected to influence sex and age distributions, the number of licences held by hunters, and certain licence combinations.

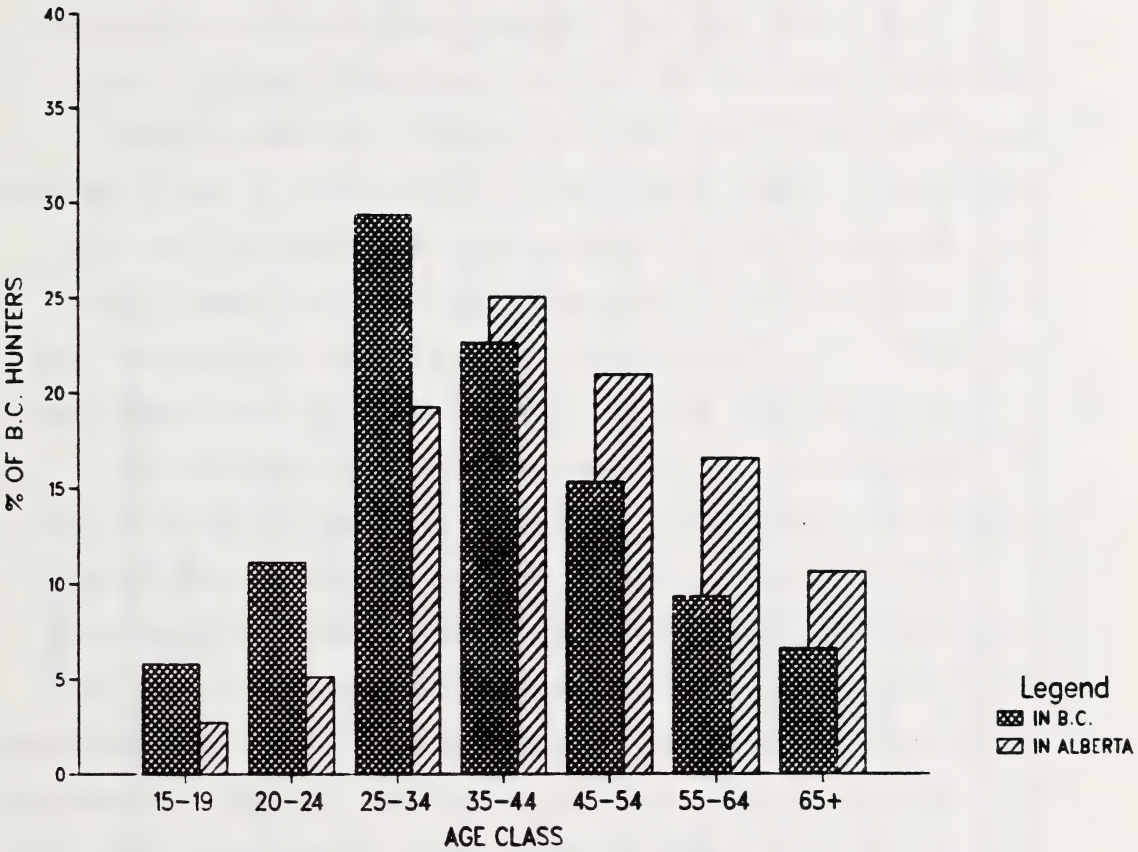


FIGURE 10: A comparison of the age distributions of British Columbian hunters in British Columbia and in Alberta. (Data presented are averages from the 1981-82 and 1982-83 seasons).

Source: Ministry of the Environment, Government of British Columbia (personal correspondence).

the general decline in the number of hunters occurred, 1980-1984. It is expected that between 1974-1979 the patterns and trends discussed in previous sections of this report held for most of the common licence types.

Total licence sales, province-wide, numbered 323 441 in 1984, the lowest total recorded of the five years investigated (Table 6). Sales reached their peak in 1981 at 352 539 licences. Bird game licencees constituted the largest single group of licence holders in four of the five years, averaging 25.2% of the licenced population (Table 7). The next largest group of licence holders were white-tailed deer hunters at an average of 21.7%, followed by moose hunters at 17.9%. An average of 16.9% of licence holders were mule deer licencees and only 9.4% on average were elk licence holders. All the remaining licence types combined (bear, mountain sheep, antelope etc.) represented an average of 8.9% of licencees.

The only group of hunters to decrease in proportion was bird game licencees who represented 30.6% of all licence holders in 1980 and only 20.1% in 1984 (Table 6). The percentage of moose hunters remained fairly constant over the same period, while the remaining licence types experienced slight increases in their percentages of the total licensed hunter population (Table 6). In terms of absolute numbers, moose and mule deer licence sales declined, but not as significantly as bird game licences.

Analysis of the five most common licence types (Bird Game, White-tailed Deer, Mule Deer, Elk and Moose), revealed that the percentage of hunters holding only one of these licences dropped nearly 6% (41.3% to 35.4%; Table 8) from 1980 to 1984. This drop occurred despite the average number of licences per hunter remaining relatively constant. The number and percentage of hunters purchasing only Bird Game licences dropped significantly over the five years, while hunters purchasing only one Big Game licence increased in

TABLE 6

NUMBER AND PERCENTAGE OF LICENCE TYPES ISSUED BY YEAR

1980 - 1984

LICENCE TYPE	YEAR				
	1980	1981	1982	1983	1984
Bird Game	105 799 (30.6)	94 219 (26.7)	87 451 (25.0)	81 800 (23.4)	65 133 (20.1)
General Elk	28 910 (8.4)	31 879 (9.0)	30 709 (8.8)	34 470 (9.9)	35 351 (10.9)
General Moose	62 072 (18.0)	65 185 (18.5)	63 745 (18.2)	63 406 (18.2)	53 654 (16.6)
General Mule Deer	54 455 (15.8)	58 669 (16.6)	59 753 (17.1)	60 877 (17.4)	56 158 (17.4)
General White-tailed Deer	66 480 (19.3)	74 581 (21.2)	77 247 (22.1)	77 201 (22.1)	77 557 (24.0)
Others	27 606 (8.0)	28 006 (7.9)	30 699 (8.8)	31 560 (9.0)	35 588 (11.0)
Total	345 322 (100.0)	352 539 (100.0)	349 604 (100.0)	349 314 (100.0)	323 441 (100.0)

TABLE 7

LICENCE TYPES ISSUED BY SEX: AVERAGE PERCENTAGES 1980-1984

LICENCE TYPE	MALES	FEMALES[1]	ALL HUNTERS
Bird Game	25.4%	18.7%	25.2%
General Elk	9.5%	6.9%	9.4%
General Moose	17.8%	20.1%	17.9%
General Mule Deer	16.8%	19.6%	16.9%
General White-tailed Deer	21.5%	27.5%	21.7%
Others	9.0%	7.1%	8.9%
Total	100.0%	100.0%	100.0%

Note:

[1]In relative terms, females comprised only a small portion of the total hunter population averaging 5.1% of all certificate holders during these years.

TABLE 8

NUMBERS AND PERCENTAGES OF MULTIPLE AND SINGLE LICENCE HOLDERS[1]

	YEARS				
	1980	1981	1982	1983	1984
Mean No. of Licences Per Hunter	2.07	2.13	2.12	2.13	2.12
Per Cent of Hunters With					
Only 1 Licence	41.3	37.7	37.2	36.4	35.4
Only 2 Licences	23.6	25.0	26.2	26.8	28.2
Only 3 Licences	22.1	23.7	24.2	24.4	24.8
Only 4 Licences	12.8	13.4	12.3	12.3	11.4
More Than 4 Licences	0.30	0.10	0.04	0.10	0.05
Estimated Per Cent of Hunters With:					
Bird Game Licence Only	28.5	22.6	21.0	19.3	11.2
White-tailed Licence Only	3.7	4.9	5.5	5.8	7.9
Mule Deer Licence Only	1.9	2.0	2.3	2.3	2.0
Elk Licence Only	0.8	0.9	0.9	1.1	1.4
Moose Licence Only	4.9	5.6	5.8	5.7	4.8
Big Game Licence Only	11.3	13.4	14.5	14.9	16.1
Number of Hunters	158 996	158 197	156 349	155 304	143 298
Bird Game Licence Holders	105 799	94 219	87 451	81 800	65 133
Bird Game Only Licence Holders	43 671	34 168	31 423	23 772	15 267
(% Bird Game Licence Holders)	(41.3)	(36.3)	(35.9)	(35.2)	(23.4)
Big Game Licences Only	17 955	21 205	22 574	23 217	23 130

[1]Includes only General Moose, General Elk, General White-tailed Deer, General Mule Deer and Bird Game Licences.

number. Although bird game licence sales declined by about 40% over the five-year span, the number of hunters holding only bird licences in 1984 is about two-thirds (66%) of the number in 1980. Thus the most significant change in the licence purchases of Alberta's resident hunters is the decline in numbers of hunters who hunted only birds.

The percentage of licence holders in 1980 through 1984 who were male averaged 96.6% (Table 9). There are proportionately more women than men in three licence categories: moose, mule deer and white-tailed deer. In fact, proportionately speaking, 6% more women than men were white-tailed deer licencees, averaging 27.5% and 21.5% respectively. Women are proportionately outnumbered by the greatest margin in the bird game licence category. An average of 18.7% of women hunters hunted birds while an average of 25.4% of men hunted birds. These data suggest that women hunters, although few in number, are more likely than men to be big game hunters.

Further analysis shows the age distribution of certificate holders to vary by licence type. Using three broad age groups it was revealed that in 1980 the largest portion of certificate holders aged 15 to 24 years were also bird game licence holders (76.7%). A smaller though still substantial portion of certificate holders 25 to 54 years of age were bird game licencees (62.7%) while a still smaller portion of certificate holders 55 years of age or more held bird game licences (57.7%).

In contrast to bird game licence holders, the majority of both elk and moose licence holders were 25 to 54 years with 20% and 41.3% of certificate holders this age respectively. Approximately equal percentages of younger and older certificate holders held these types of licences as 15% of 15- to 24-year-old hunters and 14.4% of hunters 55 years of age or

TABLE 9

NUMBER AND PERCENTAGE OF LICENCE TYPES ISSUED BY AGE GROUP

1980 - 1984

LICENCE TYPE	15 - 24 Years		25 - 54 Years		55 Years and Older	
	1980	1984	1980	1984	1980	1984
Bird Game	32 071 (76.7)	14 947 (52.6)	63 259 (62.7)	43 076 (43.6)	9 420 (57.7)	6 520 (40.7)
Elk	6 284 (15.0)	5 569 (19.6)	20 164 (20.0)	26 324 (26.6)	2 345 (14.4)	3 323 (20.7)
Moose	14 309 (34.2)	9 560 (33.6)	41 659 (41.3)	38 632 (39.1)	5 803 (35.6)	5 232 (32.6)
Mule Deer	14 878 (35.6)	11 726 (41.3)	34 756 (34.5)	38 950 (39.4)	4 467 (27.4)	5 056 (31.5)
White-tailed Deer	18 512 (44.3)	17 519 (61.7)	41 798 (41.4)	52 078 (52.7)	5 684 (34.8)	7 273 (45.4)
Certificate Holders	41 806	28 412	100 876	98 853	16 314	16 033

older for elk licence holders and 34.2% and 35.6% similarly for moose licence holders.

The age distributions for white-tailed and mule deer licencees were also similar. Nearly equal percentages of the young (15 to 24 years) and middle groups (25 to 54 years) held these licences, 44.3% and 41.4% of certificate holders for white-tailed deer licencees and 35.6% and 34.5% for mule deer licencees. However, of certificate holders 55 and older, only 34% were white-tailed deer licence holders and 27.4% held mule deer licences.

Therefore it appears that bird game hunting is enjoyed mostly by younger people while elk and moose hunting are preferred by older age groups. Mule deer and white-tailed deer are hunted about equally by both.

These patterns in the age distributions of the various licence holders remained nearly constant from 1980 though 1984, reflecting only the changes in overall certificate and licence sales (e.g. fewer younger and bird game hunters). The one exception concerns white-tailed deer licence holders. By 1984 the age distribution of these hunters shifted toward a greater representation of the 15-24 year group. The explanation for this change lies in the overall decrease in bird game hunters, which are predominantly younger individuals. There was no increase in the absolute number of young white-tailed deer hunters although this appeared to be the case due to the consistently high numbers of white-tailed deer hunters and the dramatic decline in bird game licence holders.

GENERAL DISCUSSION

Sex Distribution

Historically most hunters have been men (Hendee and Potter 1971; Peterle and Scott 1977; Phillips et al 1977; Filion 1978). The present study is no exception in that over the 11-year period studied, an average of 95.6% of Alberta Wildlife Certificate holders were men (Table 2). Although women have made inroads into virtually all male-dominated sports in recent years, hunting remains an exception. Reasons for this may include traditional sex-role stereotyping, negative attitudes of men toward women hunters, fewer opportunities for women to participate in the sport, negative attitudes of women toward killing (Shaw and Gilbert 1974; Peterle and Scott, 1977) and little knowledge of wildlife and ecology by women (King 1983). It may not be surprising therefore that female hunters have never numbered more than 8 347 or 5.8% (1984) of Alberta's resident hunter population (Table 2).

However, with changing lifestyles and social attitudes, and with more women in the labor force with defined leisure time, the number of women hunters has been increasing. Of all Alberta Wildlife Certificate holders in 1974 only 3 741 or 3.1% were women (Appendix 2). By 1984 they numbered 8 461 or 5.7% of all Alberta's hunters. Although not dramatic, this steady increase observed over the 11-year period (Figure 2) parallels the slight increase in women hunters observed in the United States (King 1983).

Although women hunters still comprise a small portion of all hunters they may become an important segment of the hunter population in the future, especially if their numbers continue to increase. One justification for taking interest is that the kinds of hunting activities in which women

participate are characteristically different from those of men. For instance, in the U.S. women generally begin hunting at an older age, more often hunt big game, spend fewer days hunting, are less involved in hunting-related organizations, read fewer hunting-related articles and invest less in their hunting activities (McCarty 1983). In Alberta, women are more likely to purchase big game licences than men (Table 8). The 1981 Survey on the Value of Wildlife to Canadians identified that Albertan men spent over twice as much money as women while hunting large mammals, and almost twice as much while hunting birds (unpublished data, see Filion et al 1983 for highlights). The survey also identified that men spent more days than women hunting big game, but fewer days hunting birds. It is tempting to suggest that women who purchase big game licences are doing so in order to accompany male companions on hunting trips. However, women participating in bird hunting appear to be a serious and dedicated element of the hunting population. Nevertheless, it appears that in Alberta, as in the U.S., women hunters are less dedicated to the sport than are men, spending less time and money on hunting and related activities.

If women hunters continue to increase in number there may be important consequences for recreational hunting in Alberta in areas such as training and licence revenue. As female hunters now number little more than 8 000, concern is clearly unwarranted at this time. However, the population of women may be considered as an emerging group within the hunting community.

Age Distribution

Hunting is usually perceived as an activity involving younger people. In 1984, more than half of Alberta's Certificate holders were less than 35 years old and more than 75% were under 45 (Figure 3). These observations are

not unique to this province as many studies (Peterle 1967; Klessig and Hale 1972; Filion et al 1983) have shown the majority of North American hunters to be under 40.

Despite the preponderance of people younger than 40 who hunt, the overall age structure of hunter populations in North America is beginning to reflect lower participation rates of the younger age groups (Peterle 1967; Lobdell et al 1969; Klessig and Hale 1972).

In Alberta, 15- to 19-year-olds comprised 12.3% of all resident hunters in 1974 (Table A). In 1984, the contribution of this age group dropped 5.2% to a low of 7.1%. This is a significant observation as studies have shown that the younger the age of initiation into hunting, the longer the person tends to remain an active hunter (e.g. Applegate 1984). Filion and Parker (1984), in comparing migratory bird hunters across Canada, reported that the average age at which hunting began was youngest for the prairie provinces at 16 years. Therefore the most significant recruitment into the Alberta hunting population is probably the 15- to 19-year-olds, and, perhaps to a lesser extent, the 20- to 24-year-olds. The proportionate contribution of this second age group, 20-24 year olds, has dropped 3.0% from 1974 to 1984. Over the same period, the percentage of 25- to 34-year-olds in Alberta's resident hunter population increased 5%, while the 35 to 44 age group also showed an increase of 2.9%. Thus an aging trend is apparent, where the contribution of the 25 to 44 age group to the overall hunting population is becoming more significant while the number of hunters 15- to 24-years-old is declining.

Even when one considers the general aging of Alberta's population, the aging of the hunter population is still apparent and in fact becomes more pronounced. Upon comparing an expected age distribution of hunters

based on Alberta population data and the observed age distribution from the certificate files, it was revealed that the participation of the three youngest age groups of hunters decreased by 11.1%, 22.0% and 6.5% respectively from 1976 to 1981 (Table 3). Those in the older age groups such as the 35 to 44 and 45 to 54 age ranges increased their representation by as much as 10%.

This shows that although the population of Alberta has aged between 1974 and 1984, the hunter population has not only aged with the rest of Albertans but has done so at even a more accelerated rate. Therefore influences outside of the changing age structure in Alberta must be considered as an explanation for the aging of Alberta's hunters. If this trend continues the incidence of hunting may continue to fall as fewer younger hunters are recruited.

The age distribution of women hunters has also changed but in a slightly different manner over the 11-year period (Table 3). Although the number of women hunters increased in all of the age groups, changes in the participation of each age group were approximately double those that occurred within the resident hunter population. However, when comparing a small population such as that of women hunters with one as large as all the women in the province, the results can be misleading and should be interpreted with caution.

Peterle's research (Peterle 1967; Peterle and Scott 1977) has shown that older hunters in Ohio tend to be less successful and less interested in their hunting pursuits. They also appear to spend less money on hunting and would be less willing to pay for the privilege of hunting (Peterle 1977). If these results are applicable to Alberta, older hunters in this province may be less dedicated to the sport of hunting by putting less time and money

toward it. Should the observed aging trend continue, resource management policies pertaining to the recreational use of wildlife may have to adjust to the needs and preferences of older resource users.

Regional Differences

From 1974 to 1984, the only area to decrease its proportionate representation of the resident hunter population was the Edmonton area (residence code 1), although this area did contribute the most hunters of any area in all but the last year of the study period (Figure 7). The only area to sustain an increase over the 11-year period was in central Alberta (residence code 6) which in 1984 became the most populous region in terms of hunter numbers. North-western Alberta (residence codes 8 and 9) peaked noticeably in its proportionate contribution to the hunter population in 1981, while the percentages of hunters from the remaining areas changed relatively little.

These observed changes may be a function of the changing Alberta population distribution as would seem likely in northern Alberta where an economic "boom and bust" occurred during the study period. However, this explanation probably does not hold true for the proportionate decrease in Edmonton's hunters as the population of this city increased over the 11 years. Further detailed research may offer explanations for this change.

Over the past several years, Alberta, along with the rest of Canada has experienced a trend toward increased urbanization. From 1976 to 1981, the percentage of Albertans living in urban areas increased nearly 17% (Table 10).

TABLE 10

THE URBAN/RURAL COMPONENT OF ALBERTA'S HUNTING POPULATION
1976 AND 1981

	1976	1981	Rate of Change
Urban[1] Population[2]	811 390	1 037 720	+ .1695 (16.95%)
Urban Certificate Holders	56 288	63 418	+ .1265 (12.65%)
% of Urban Population who hold Certificates	6.9%	6.1%	
Rural Population	523 520	658 335	+ .101 (10.1%)
Rural Certificate Holders	71 209	94 779	+ .3308 (33.08%)
% of Rural Population who hold Certificates	13.6%	14.4%	
Total Population	1 334 910	1 696 055	+ .271 (27.1%)

Note: [1]Urban = cities, towns etc., in residence codes 1-4 with > 1000 people (1981).

[2]Population $\geq$ 15 yrs.

Research has shown urbanization to affect hunter populations in at least three ways:

1) People are not as likely to be exposed to hunting at a young age.

In several studies (Klessig and Hale 1972; Langenau and Mellon 1980 as cited in Applegate 1982), the age of initiation of hunters has been shown to be related to place of residence, where those living in rural areas are more likely to begin hunting at earlier ages than those living in urban areas. Reasons cited for this include greater contact with active hunters, more land available (and therefore more opportunities to hunt in rural areas), and also a tendency for more rural people to approve of hunting (Applegate 1973). Our observations concerning the diminishing participation of young hunters appears to offer support for this hypothesis concerning the effects of urbanization on the age of initiation of hunters.

2) Because of the late exposure to hunting, urban hunters do not hunt as long as rural hunters.

Applegate (1982) showed that as the age of initiation of hunters increases so does the rate of desertion; the result being a lessening of the average lifetime participation of hunters. Therefore, the hunter population may grow smaller and have a more homogeneous age distribution, with the majority of hunters in the middle age ranges and fewer at either end of the age spectrum. Analysis of the changing age structure of Alberta's Wildlife Certificate holders shows this to be the case with the modal age group of 25 to 34 years peaking or increasing its relative representation over time (Figure 3), and the younger age groups becoming smaller.

3) Urban people generally do not participate as much as rural people in hunting.

It has been shown that urban dwellers generally hunt less than those living in rural areas (Davis 1967; Klessig 1970, both cited in Schole 1973). In 1981, 6.1% of urban Albertans purchased Wildlife Certificates while 14.4% of rural Albertans did (Table 10). Therefore as urbanization increases, there should be fewer hunters overall. Our data show that while urbanization increased in Alberta from 1976 to 1981, participation in hunting did not decrease substantially (Table 1). However, the numbers of resident hunters and the participation of eligible Albertans did begin to decline after 1981. It is possible that increasing urbanization takes several years to effectively reduce the size of the hunter population.

On the surface it appears that the documented trend toward urbanization in Alberta is influencing the hunter population largely as predicted by research in the U.S. For example, this influence may explain in part the decrease in hunter numbers in the Edmonton area. However, when the population of rural hunters are analysed separately from urban hunters, it becomes evident that other influences are at work.

The population of urban hunters appears to have been changing in a pattern similar to that observed in the entire hunter population and in a manner expected as a result of urbanization. The population of rural hunters, on the other hand, has changed in quite a different manner. For example, the proportionate contribution of the 15- to 19-year-old age group decreased at nearly the same rate in both the rural and urban hunter populations from 1974 to 1984 (Figure 9). This is an unusual finding. Although rural young people probably still have more contact with active hunters and more opportunities to hunt than urban young people, their

attitudes toward participation in the sport appear to be changing at the same rate. A possible explanation for this may be that "urban attitudes" toward hunting and other, possibly preferred, leisure time activities are spilling over into rural areas through media influences and increased interaction of the respective populations.

In addition, the proportionate representation of rural hunters from the middle age categories has increased more than can be accounted for given the decreases in representation of young people. Possible explanations for this include: (i) differential urban influences on rural dwellers by age group, where older rural dwellers are affected less; (ii) an increase in hunters aged 25 to 44 years as a direct result of an influx of workers of this age, coinciding with the economic boom experienced in the northern areas of the province; or, (iii) a cohort effect where the increases observed in the middle age ranges are simply caused by the aging baby boom generation as they move up through the age distribution.

In conclusion, although it appears that urbanization can account for the observed changes in the age distribution of Alberta's resident hunters over time when rural/urban differences are taken into consideration, in reality it may be that many additional influences including cohort and economic effects are interacting together in a complex manner to produce the observed changes. Unfortunately, the nature of the available data does not permit a quantitative assessment of this subject.

Non-resident Hunters

This study found that the numbers of hunters from outside Alberta are declining. Most non-resident certificate holders resided in British Columbia, and the number of these hunters dropped by nearly half over the

11 years. A factor which may account for this drop could be declining economic conditions throughout Canada which may have forced many out-of-province hunters to hunt at home instead of incurring the extra cost of travelling to Alberta.

Economic conditions may also account for the less dramatic decrease in non-resident alien hunters, in that they may not be as constrained by worsening economies. Most non-resident alien hunters were from the United States which was not affected in the same manner as Canada. In addition, the U.S./Canada dollar exchange rate has probably influenced participation of non-resident hunters from the U.S.

One of the consequences of the decline in non-resident hunting is the loss of revenue to Albertans generated by expenditures relating directly to hunting. In 1976 non-resident hunters spent about 3.8 million dollars in Alberta (Phillips and McElhaney 1977). This comprised about 9% of the total provincial expenditures relating to hunting (see also Phillips et al 1977). However, the non-resident component represents new dollars entering the Alberta economy. Thus any decline in non-resident hunting could have a significant economic impact. The drop in numbers of non-resident hunters may have to be monitored, and perhaps incentives relative to licencing should be investigated in order to boost non-resident hunting.

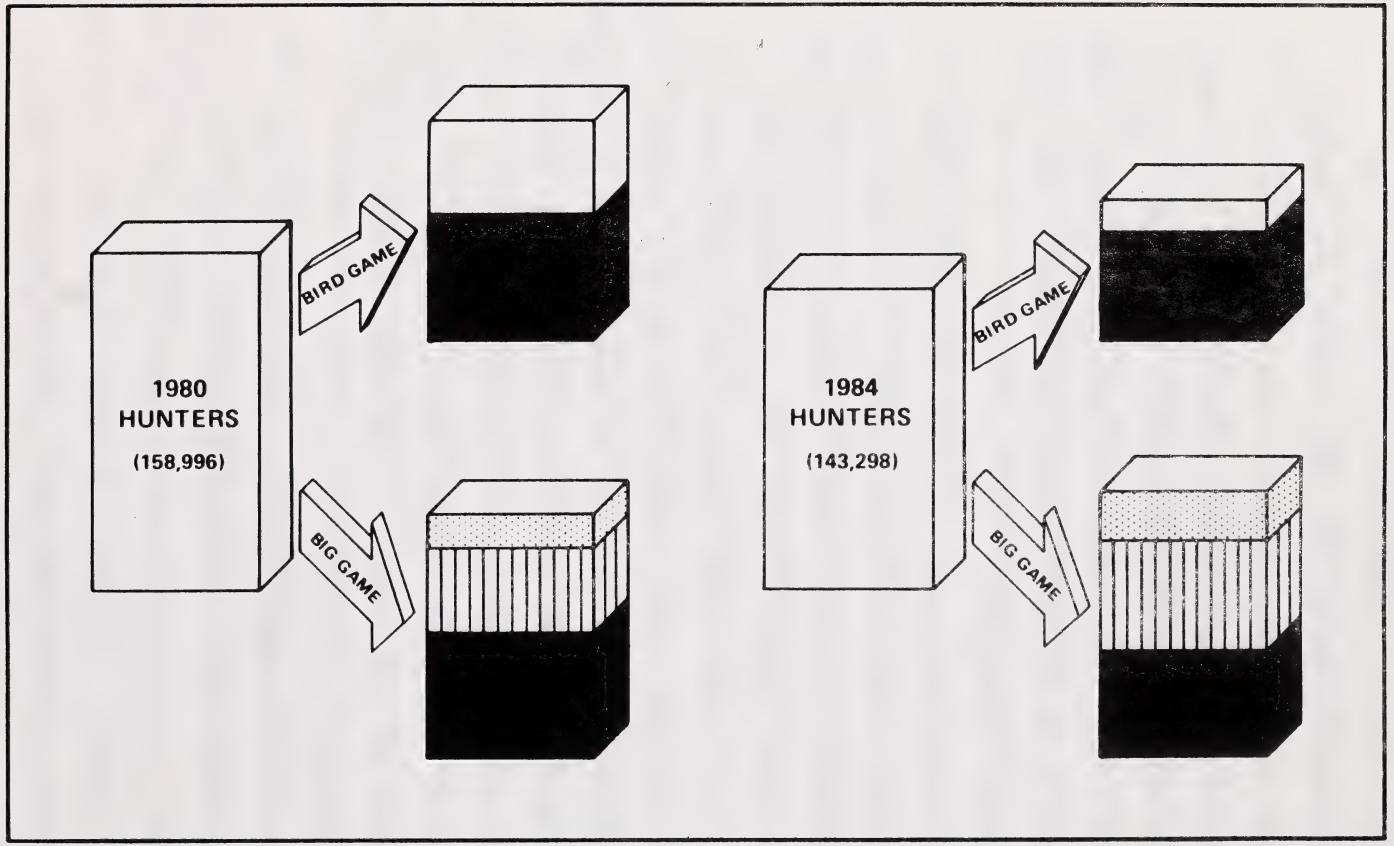
Although few in number, non-resident and non-resident alien hunters add an interesting dimension to the demographic structure of Alberta's hunter population, emphasizing the already observed trends of aging and male dominance of the sport.

Changes in Licence Sales

This study has identified some patterns in the sex and age distributions of Alberta's hunters over time. However, the types of hunting that Albertans are engaged in do not seem to have changed as dramatically. Although a slight increase in the hunting of large mammals is apparent, the only significant change seems to be a widespread decline in the hunting of birds. These findings are summarized in Figure 11 which portrays profiles of the 1980 and 1984 hunter populations in terms of the numbers and types of licences sold.

In this illustration, hunters are loosely classified into two categories: bird game hunters and big game hunters. Bird game hunters may either have purchased a bird game licence or a combination of a bird game licence and one or more big game licences. Big game hunters may have purchased either one big game licence, more than one big game licence or a combination of a bird game licence and one or more big game licences. When comparing the 1980 and 1984 distributions, the dramatic decrease in the number of hunters who bought only a bird game licence becomes quickly apparent. Despite this decrease in the number of bird hunters, the number of hunters who bought a combination of bird and big game licences remained nearly the same. Also illustrated is the slight increase in the number of hunters who purchased only big game licences.

The decline in the number of hunters holding only a bird game licence could be a major factor explaining the decline in certificate sales from 1980 to 1984. In 1980, 43 671 hunters purchased a bird game licence and no other licence (Table 8). In 1984 15 267 hunters bought only a bird game licence; a difference of 28 404 individuals. Over the same time span,



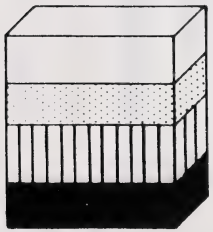


FIGURE 11. Profiles of the 1980 and 1984 hunter populations. Summarized in terms of the numbers and types of licences sold.

certificate sales dropped from 158 996 hunters in 1980 to 143 298 in 1984; a difference of 15 698 people.

There are a number of reasons which may explain why bird hunting has suffered an apparent decline in popularity. Bird game managers may suggest a shortage of birds as explanation. However, the recent decline in numbers of young hunters may also be a factor; especially since over 75% of hunters under 24 were bird hunters during the period of high hunter numbers (1980; Table H).

Filion and Parker (1984) suggest that in 1976 the principle reasons for bird hunter inactivity and dissatisfaction were related to the quality of the hunting experience rather than to the likelihood of success (i.e. shortage of birds). Similar findings in the U.S. have been linked to an increase in urbanization (Schole 1973). As urbanization increases, emphasis is placed more on the quality of the hunt than on success. Filion and Parker (1984) found that 70% of waterfowl hunters who were dissatisfied with their hunt listed inconsiderate hunters, crowded hunting areas, and posted land as reasons.

Nevertheless, general decreases in a number of game bird populations, particularly waterfowl have occurred since 1980. In 1984, breeding indices of ducks declined about 17% from what they were in 1980 and numbers of federal migratory bird licences dropped by 35% during the same time period (H. Weaver, pers. comm.). This decline suggests that shortages of birds may also be an important factor influencing interest in the hunting of birds.

CONCLUSION

There is little doubt that the average Albertan is aware of the province's wildlife resources, and that a large number of individuals are involved in wildlife-related recreation (Filion et al 1983). However, participation in hunting is declining. It is possible that this decline is related to increasing urbanization, changing perceptions and attitudes toward the consumptive use of wildlife, and, in some cases, declines in wildlife populations (e.g. waterfowl).

The explanation for the decline in hunting is a very complex one, and is beyond the scope of this report. However, it is apparent that the factors mentioned above are involved and are probably related to the economic and demographic changes that Alberta has undergone since 1974. The changes in numbers of young working males as a result of the petroleum industry boom and bust warrants special analysis. The increasing provincial population and the decreasing wildlife habitat base point to a need for better understanding of the socio-economic values of wildlife by wildlife managers. This in turn may indicate a redefinition of some game management programs to include these values along with the requirements of the wildlife resource.

In wildlife management, hunting is used to remove a portion of the annual surplus of animals before they are lost to natural causes. Hunting also provides individuals with opportunities for outdoor recreation. Thus hunting and many other management practices are connected to a set of biological, political, socio-economic and cultural factors. Wildlife managers commonly use hunting days and harvest success as indicators of the activity and benefit of the hunt. However, these variables fall short of describing the entire hunting experience and do not point to the actual

sources of recreational benefit or enjoyment. A number of studies in the United States have identified factors such as nature, companionship and escapism as important features of hunting success and satisfaction and therefore indicators of continued commitment (see Gilbert 1977 for examples). Similar studies need to be conducted in Alberta. In addition, a major study on the attitudes and perceptions of hunters about their sport is required, particularly of hunters who do not hunt every year. Knowledge of the trends in the preferences and attitudes of hunters, as well as their level of commitment can play an effective role in policy and program planning.

This study has already raised a number of important questions concerning the future of sport hunting in Alberta. Although numerous outdoor activities are competing with hunting in terms of land use, and as a result hunting regulations have become more complex, interest in hunting appears to remain high. Unpublished data from the National Survey on the Importance of Wildlife to Canadians (1981) indicates that over 25% of Albertans are interested in hunting. It therefore appears that the potential is there for larger numbers of hunters than we currently see afield. Despite this pool of interested citizens however, participation in hunting is declining. Recruitment of younger people to the sport is also declining. These observations point to the need for a more vigorous investigation of the attitudes and characteristics of hunters before hunting ceases to be a viable part of a comprehensive wildlife management scheme.

GLOSSARY

Wildlife Certificate holder - any person 14 years of age or older who has purchased a Wildlife Certificate entitling him/her to purchase any number of species specific hunting licences, or to apply for various special licences issued through a lottery process or special draw.

Resident Wildlife Certificate holder - a resident of Alberta at the time of purchasing a Wildlife Certificate.

Non-resident Wildlife Certificate holder - a resident of a province other than Alberta at the time of purchasing a Wildlife Certificate.

Non-resident Alien Wildlife Certificate holder - a resident of a country other than Canada at the time of purchasing a Wildlife Certificate.

Licence - is purchased by a Wildlife Certificate holder for the purposes of hunting a specific species or group of species.

Big Game - large mammals that can be legally hunted.

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APPENDIX 1

TABLE A

NUMBER AND PERCENTAGE OF ALBERTA RESIDENT CERTIFICATE HOLDERS BY AGE GROUP
1974 - 1984

AGE	1974	1975	1976	1977	1978	1979	1980
15-19 Years	13 791 (12.3)	14 504 (12.5)	15 480 (12.1)	17 355 (12.2)	17 604 (11.8)	16 917 (11.1)	16 011 (10.1)
20-24 Years	17 581 (15.7)	19 178 (16.5)	21 479 (16.8)	23 988 (16.9)	24 174 (16.3)	24 399 (16.0)	25 795 (16.2)
25-34 Years	31 909 (28.5)	33 233 (28.6)	36 994 (29.0)	41 822 (29.5)	44 408 (29.9)	47 362 (31.0)	50 295 (31.6)
35-44 Years	21 960 (19.6)	22 280 (19.2)	23 977 (18.8)	26 419 (18.6)	27 667 (18.6)	28 769 (18.8)	30 697 (19.3)
45-54 Years	14 962 (13.3)	15 037 (12.9)	16 367 (12.8)	17 912 (12.6)	18 675 (12.6)	19 320 (12.6)	19 884 (12.5)
55-64 Years	7 694 (6.9)	7 807 (6.7)	8 559 (6.7)	9 209 (6.5)	9 933 (6.7)	10 316 (6.8)	10 606 (6.7)
65 Years & Older	4 223 (3.8)	4 164 (3.6)	4 650 (3.6)	5 068 (3.6)	6 260 (4.2)	5 661 (3.7)	5 708 (3.6)
All Ages	112 120 (100.0)	116 203 (100.0)	127 506 (100.0)	141 773 (100.0)	148 721 (100.0)	152 744 (100.0)	158 996 (100.0)

AGE	1981	1982	1983	1984	Average %	% Change 1974-1984	Cumulative % 1974	Cumulative % 1984
15-19 Years	14 357 (9.1)	12 386 (7.9)	11 574 (7.5)	10 235 (7.1)	10.3	-5.2	12.3	7.1
20-24 Years	24 329 (15.4)	23 333 (14.9)	21 702 (14.0)	18 177 (12.7)	15.6	-3.0	28.0	19.8
25-34 Years	50 979 (32.2)	51 989 (33.3)	51 895 (33.4)	48 070 (33.5)	31.0	+5.0	56.5	53.3
35-44 Years	32 014 (20.2)	32 978 (21.1)	33 744 (21.7)	32 255 (22.5)	20.0	+2.9	76.1	75.8
45-54 Years	19 708 (12.5)	19 454 (12.4)	19 567 (12.6)	18 528 (12.9)	10.4	-0.4	89.4	88.7
55-64 Years	10 671 (6.7)	10 679 (6.8)	11 141 (7.2)	10 604 (7.4)	6.8	-3.1	96.3	96.1
65 Years & Older	6 139 (3.9)	5 530 (3.5)	5 681 (3.7)	5 429 (3.8)	3.7	0.0	100.1	99.9
All Ages	158 197 (100.0)	156 349 (100.0)	155 304 (100.0)	143 298 (100.0)				

TABLE B

NUMBER AND PERCENTAGE OF FEMALE ALBERTA RESIDENT CERTIFICATE HOLDERS BY AGE GROUP
1974 - 1984

AGE	1974	1975	1976	1977	1978	1979	1980
15-19 Years	213 (6.1)	205 (5.3)	285 (5.7)	347 (5.7)	324 (5.4)	351 (5.1)	362 (4.8)
20-24 Years	638 (18.2)	774 (20.0)	981 (19.8)	1 168 (19.1)	1 028 (17.2)	1 139 (16.6)	1 200 (16.0)
25-34 Years	1 230 (35.0)	1 312 (33.8)	1 723 (34.7)	2 199 (35.9)	2 226 (37.2)	2 561 (37.4)	2 793 (37.3)
35-44 Years	743 (21.1)	833 (21.5)	1 075 (21.6)	1 294 (21.1)	1 284 (21.4)	1 493 (21.8)	1 730 (23.1)
45-54 Years	438 (12.5)	506 (13.0)	565 (11.4)	719 (11.7)	678 (11.3)	828 (12.1)	857 (11.5)
55-64 Years	193 (5.5)	196 (5.1)	265 (5.3)	307 (5.0)	320 (5.3)	364 (5.3)	420 (5.6)
65 Years & Older	59 (1.7)	53 (1.4)	73 (1.5)	91 (1.5)	127 (2.1)	114 (1.7)	120 (1.6)
All Ages	3 514 (100.0)	3 879 (100.0)	4 967 (100.0)	6 125 (100.0)	5 987 (100.0)	6 850 (100.0)	7 482 (100.0)

AGE	1981	1982	1983	1984	Average %	% Change 1974-1984	Cummulative % 1974	Cummulative % 1984
15-19 Years	368 (4.5)	295 (3.8)	329 (4.0)	340 (4.1)	5.0	-2.0	6.1	4.1
20-24 Years	1 213 (14.9)	1 095 (14.2)	1 093 (13.4)	978 (11.7)	15.9	-6.5	24.3	15.8
25-34 Years	2 967 (36.4)	2 954 (38.3)	3 240 (39.6)	3 200 (38.3)	36.7	+3.3	59.3	54.1
35-44 Years	1 989 (24.4)	1 895 (24.6)	2 005 (24.5)	2 191 (26.2)	22.8	+5.1	80.4	80.3
45-54 Years	1 003 (12.3)	939 (12.2)	990 (12.1)	1 062 (12.7)	12.1	+0.2	92.9	93.0
55-64 Years	448 (5.5)	387 (5.0)	391 (4.8)	431 (5.2)	5.2	-0.3	98.4	98.2
65 Years & Older	153 (1.9)	142 (1.8)	139 (1.7)	145 (1.7)	1.8	+1.0	100.1	100.9
All Ages	8 141 (100.0)	7 707 (100.0)	8 187 (100.0)	8 347 (100.0)				

TABLE C

NUMBER AND PERCENTAGE OF ALBERTA RESIDENT CERTIFICATE HOLDERS BY REGION
1974 - 1984

RESIDENCE	1974		1975		1976		1977		1978		1979	
1. Edmonton	27 984	(25.0)	28 040	(24.1)	29 972	(23.5)	32 450	(22.9)	32 552	(21.9)	32 430	(21.2)
2. Red Deer	2 339	(2.1)	2 548	(2.2)	2 840	(2.2)	3 106	(2.2)	3 371	(2.3)	3 395	(2.2)
3. Calgary	19 416	(17.3)	19 600	(16.9)	20 437	(16.0)	22 173	(15.6)	22 801	(15.3)	23 170	(15.2)
4. Lethbridge	2 569	(2.3)	2 679	(2.3)	3 039	(2.4)	3 239	(2.3)	3 259	(2.2)	3 293	(2.2)
5.	9 330	(8.3)	9 856	(8.5)	11 393	(8.9)	12 216	(8.6)	12 441	(8.4)	12 908	(8.5)
6.	18 609	(16.6)	19 471	(16.8)	21 824	(17.1)	23 936	(16.9)	25 249	(17.0)	26 526	(17.4)
7.	11 280	(10.1)	10 516	(9.0)	11 696	(9.2)	13 824	(9.8)	14 872	(10.0)	15 389	(10.1)
8.	12 378	(11.0)	13 103	(11.3)	14 899	(11.6)	16 740	(11.8)	18 768	(12.6)	19 397	(12.7)
9.	8 211	(7.3)	8 626	(7.4)	9 141	(7.2)	10 886	(7.7)	12 008	(8.1)	13 062	(8.6)
10.	0	(0.0)	1 764	(1.5)	2 356	(1.8)	3 188	(2.2)	3 394	(2.3)	3 174	(2.1)
Urban:Regions 1-4	52 308	(46.7)	52 867	(45.5)	56 288	(44.1)	60 968	(43.0)	61 983	(42.0)	62 288	(40.8)
Rural:Regions 5-10	59 808	(53.3)	63 336	(54.5)	71 209	(55.8)	80 790	(57.0)	86 732	(58.3)	90 456	(59.2)
South-Central: Regions 5-7	39 219	(35.0)	39 843	(34.3)	44 913	(35.2)	49 976	(35.3)	52 562	(35.3)	54 823	(35.9)
North: Regions 8-10	20 589	(18.4)	23 493	(20.2)	26 296	(20.6)	30 814	(21.7)	34 170	(23.0)	35 633	(23.3)
Total	112 116	(100.0)	116 203	(100.0)	127 497	(100.0)	141 758	(100.0)	148 715	(100.0)	152 744	(100.0)

TABLE C

NUMBER AND PERCENTAGE OF ALBERTA RESIDENT CERTIFICATE HOLDERS BY REGION
1974 - 1984

RESIDENCE	1980		1981		1982		1983		1984		Average %
1. Edmonton	33 301	(20.9)	31 905	(20.2)	31 106	(19.9)	29 900	(19.3)	26 287	(18.3)	21.5
2. Red Deer	3 687	(2.3)	3 676	(2.3)	3 830	(2.4)	3 858	(2.5)	3 482	(2.4)	2.3
3. Calgary	23 932	(15.1)	24 522	(15.5)	25 977	(16.6)	25 316	(16.3)	22 604	(15.8)	16.0
4. Lethbridge	3 237	(2.0)	3 315	(2.1)	3 284	(2.1)	3 566	(2.3)	3 225	(2.3)	2.2
5.	13 039	(8.5)	13 501	(8.5)	13 499	(8.6)	13 926	(9.0)	13 125	(9.2)	8.6
6.	27 569	(17.3)	27 797	(17.6)	27 994	(17.9)	28 528	(18.4)	27 374	(19.1)	17.5
7.	15 996	(10.1)	16 083	(10.2)	15 441	(9.9)	15 569	(10.0)	15 354	(10.7)	9.9
8.	20 515	(12.9)	20 240	(12.8)	19 230	(12.3)	18 939	(12.2)	17 600	(12.3)	12.1
9.	14 221	(8.9)	13 769	(8.7)	12 700	(8.1)	12 218	(7.9)	11 070	(7.7)	8.0
10.	3 492	(2.2)	3 389	(2.1)	3 282	(2.1)	3 454	(2.2)	3 176	(2.2)	1.9
Urban:Regions 1-4	64 157	(40.4)	63 418	(40.1)	64 197	(41.1)	62 640	(40.3)	55 598	(38.8)	42.1
Rural:Regions 5-10	94 832	(59.6)	94 779	(59.9)	92 146	(58.9)	92 634	(59.6)	87 699	(61.2)	57.9
South-Central: Regions 5-7	56 604	(35.6)	57 381	(36.2)	56 934	(36.4)	58 023	(37.4)	55 853	(39.0)	36.0
North: Regions 8-10	38 228	(24.0)	37 398	(23.6)	35 212	(22.5)	34 611	(22.3)	31 846	(22.2)	22.0
Total	158 989	(100.0)	158 197	(100.0)	156 343	(100.0)	155 274	(100.0)	143 297	(100.0)	100.0

Rural/urban differences: significant, $p < 0.001$

TABLE D

NUMBER AND PERCENTAGE OF ALBERTA FEMALE RESIDENT CERTIFICATE HOLDERS BY REGION
1974 - 1984

RESIDENCE	1974	1975	1976	1977	1978	1979
1. Edmonton	657 (18.7)	663 (17.1)	851 (17.1)	1 048 (17.1)	1 023 (17.1)	1 089 (15.9)
2. Red Deer	67 (1.9)	79 (2.0)	117 (2.4)	120 (2.0)	81 (1.4)	106 (1.5)
3. Calgary	563 (16.0)	577 (14.9)	673 (13.5)	721 (11.8)	664 (11.1)	755 (11.0)
4. Lethbridge	75 (2.1)	80 (2.1)	103 (2.1)	124 (2.0)	109 (1.8)	124 (1.8)
5.	304 (8.6)	346 (8.9)	452 (9.1)	543 (8.9)	515 (8.6)	632 (9.2)
6.	574 (16.3)	637 (16.4)	857 (17.3)	1 094 (17.9)	1 012 (16.9)	1 166 (17.0)
7.	330 (9.4)	298 (7.7)	380 (7.7)	552 (9.0)	629 (10.5)	695 (10.1)
8.	557 (15.8)	669 (17.2)	895 (18.0)	1 051 (17.2)	1 104 (18.4)	1 217 (17.8)
9.	388 (11.0)	444 (11.4)	538 (10.8)	743 (12.1)	723 (12.1)	920 (13.4)
10.	0 (0.0)	86 (2.2)	101 (2.0)	129 (2.1)	127 (2.1)	147 (2.1)
Urban:Regions 1-4	1 362 (38.7)	1 399 (36.1)	1 744 (35.1)	2 013 (32.9)	1 877 (31.4)	2 074 (30.3)
Rural:Regions 5-10	2 153 (61.3)	2 480 (63.9)	3 223 (64.8)	4 112 (67.1)	4 110 (68.6)	4 777 (69.7)
South-Central: Regions 5-7	1 208 (34.4)	1 281 (33.0)	1 689 (34.0)	2 189 (35.7)	2 156 (36.0)	2 493 (36.4)
North: Regions 8-10	945 (26.9)	1 199 (30.9)	1 534 (30.1)	1 923 (31.4)	1 954 (32.6)	2 284 (33.3)
Total	3 515 (100.0)	3 879 (100.0)	4 967 (100.0)	6 125 (100.0)	5 987 (100.0)	6 851 (100.0)

TABLE D

NUMBER AND PERCENTAGE OF ALBERTA FEMALE RESIDENT CERTIFICATE HOLDERS BY REGION
1974 - 1984

RESIDENCE	1980	1981	1982	1983	1984	Average %
1. Edmonton	1 089 (14.6)	1 118 (13.7)	1 003 (13.0)	1 084 (13.2)	1 005 (12.0)	15.4
2. Red Deer	121 (1.6)	139 (1.7)	149 (1.9)	160 (2.0)	166 (2.0)	1.9
3. Calgary	851 (11.4)	963 (11.8)	1 071 (13.9)	1 203 (14.7)	1 284 (15.4)	13.2
4. Lethbridge	148 (2.0)	147 (1.8)	165 (2.1)	216 (2.6)	237 (2.4)	2.1
5.	717 (9.6)	815 (10.0)	936 (12.1)	1 093 (13.4)	1 145 (13.7)	10.2
6.	1 239 (16.6)	1 457 (17.9)	1 419 (18.4)	1 571 (19.2)	1 713 (20.5)	17.7
7.	808 (10.8)	1 009 (12.4)	855 (11.1)	894 (10.9)	980 (11.7)	10.1
8.	1 352 (18.1)	1 396 (17.1)	1 193 (15.5)	1 162 (14.2)	1 083 (13.0)	16.6
9.	993 (13.3)	955 (11.7)	781 (10.1)	685 (8.4)	621 (7.4)	11.1
10.	165 (2.2)	142 (1.7)	135 (1.8)	117 (1.4)	113 (1.4)	1.7
Urban:Regions 1-4	2 209 (29.5)	2 367 (29.1)	2 388 (31.0)	2 663 (32.5)	2 692 (32.3)	32.6
Rural:Regions 5-10	5 274 (70.5)	5 774 (70.9)	5 319 (69.0)	5 524 (67.5)	5 655 (67.7)	67.4
South-Central: Regions 5-7	2 764 (36.9)	3 281 (40.3)	3 210 (41.7)	3 558 (43.5)	3 838 (46.0)	38.0
North: Regions 8-10	2 510 (33.5)	2 493 (30.6)	2 109 (27.4)	1 964 (24.0)	1 817 (21.8)	29.3
Total	7 483 (100.0)	8 141 (100.0)	7 707 (100.0)	8 187 (100.0)	8 347 (100.0)	100.0

Rural/urban differences: significant, $p < 0.001$

TABLE E

NUMBER AND PERCENTAGE OF ALBERTA RESIDENT CERTIFICATE HOLDERS
BY AGE AND TYPE OF REGION
1974 - 1984

AGE	REGION	YEAR		
		1974	1975	1976
15-19 Years	Urban	5 370 (4.8)	5 481 (4.7)	5 598 (4.4)
	Rural	8 421 (7.5)	9 023 (7.8)	9 882 (7.7)
20-24 Years	Urban	8 351 (7.4)	8 973 (7.7)	9 813 (7.7)
	Rural	9 230 (8.2)	10 205 (8.7)	11 666 (9.1)
25-34 Years	Urban	16 227 (14.5)	16 282 (14.0)	17 537 (13.8)
	Rural	15 682 (14.00	16 951 (14.6)	19 407 (15.2)
35-44 Years	Urban	10 722 (9.6)	10 589 (9.1)	10 958 (8.6)
	Rural	11 238 (10.0)	11 691 (10.1)	13 019 (10.2)
45-54 Years	Urban	7 090 (6.3)	7 060 (6.1)	7 527 (5.9)
	Rural	7 872 (7.0)	7 977 (6.9)	8 840 (6.9)
55-64 Years	Urban	3 071 (2.7)	3 115 (2.7)	3 385 (2.7)
	Rural	4 623 (4.1)	4 692 (4.0)	5 174 (4.1)
65 Years and older	Urban	1 477 (1.3)	1 367 (1.2)	1 470 (1.2)
	Rural	2 746 (2.4)	2 797 (2.4)	3 180 (2.5)
TOTAL		112 120 (100.0)	116 203 (100.0)	127 506 (100.0)

TABLE E

NUMBER AND PERCENTAGE OF ALBERTA RESIDENT CERTIFICATE HOLDERS
BY AGE AND TYPE OF REGION
1974 - 1984

AGE	REGION	YEAR		
		1977	1978	1979
15-19 Years	Urban	6 212 (4.4)	6 095 (4.1)	5 738 (3.8)
	Rural	11 143 (7.9)	11 509 (7.7)	11 179 (7.3)
20-24 Years	Urban	10 739 (7.6)	10 592 (7.1)	10 470 (6.9)
	Rural	13 249 (9.3)	13 582 (9.1)	13 929 (9.1)
25-34 Years	Urban	19 154 (13.5)	19 668 (13.2)	20 459 (13.4)
	Rural	22 668 (16.0)	24 740 (16.6)	26 903 (17.6)
35-44 Years	Urban	11 685 (8.2)	11 731 (7.9)	12 006 (7.9)
	Rural	14 734 (10.4)	15 936 (10.7)	16 763 (11.0)
45-54 Years	Urban	8 082 (5.7)	8 063 (5.4)	8 244 (5.4)
	Rural	9 830 (6.9)	10 612 (7.1)	11 076 (7.3)
55-64 Years	Urban	3 528 (2.5)	3 753 (2.5)	3 732 (2.4)
	Rural	5 681 (4.0)	6 180 (4.2)	6 584 (4.3)
65 Years and older	Urban	1 568 (1.1)	2 081 (1.4)	1 639 (1.1)
	Rural	3 500 (2.5)	4 179 (2.8)	4 022 (2.6)
TOTAL		141 773 (100.0)	148 721 (100.0)	152 744 (100.0)

TABLE E

NUMBER AND PERCENTAGE OF ALBERTA RESIDENT CERTIFICATE HOLDER
BY AGE AND TYPE OF REGION
1974 - 1984

AGE	REGION	YEAR		
		1980	1981	1982
15-19 Years	Urban	5 279 (3.3)	4 654 (2.9)	3 999 (2.6)
	Rural	10 732 (6.7)	9 703 (6.1)	8 387 (5.4)
20-24 Years	Urban	11 058 (7.0)	10 236 (6.5)	9 807 (6.3)
	Rural	14 737 (9.3)	14 093 (8.9)	13 526 (8.7)
25-34 Years	Urban	21 257 (13.4)	21 531 (13.6)	22 707 (14.5)
	Rural	29 038 (18.3)	29 448 (18.6)	29 282 (18.7)
35-44 Years	Urban	12 577 (7.9)	12 864 (8.1)	13 643 (8.7)
	Rural	18 120 (11.4)	19 150 (12.1)	19 335 (12.4)
45-54 Years	Urban	8 435 (5.3)	8 174 (5.2)	8 229 (5.3)
	Rural	11 449 (7.2)	11 534 (7.3)	11 225 (7.2)
55-64 Years	Urban	3 953 (2.5)	3 910 (2.5)	4 164 (2.7)
	Rural	6 653 (4.2)	6 761 (4.3)	6 515 (4.2)
65 Years and older	Urban	1 634 (1.0)	2 049 (1.3)	1 648 (1.2)
	Rural	4 074 (2.6)	4 090 (2.6)	3 882 (2.5)
TOTAL		158 996 (100.0)	158 197 (100.0)	156 349 (100.0)

TABLE E

NUMBER AND PERCENTAGE OF ALBERTA RESIDENT CERTIFICATE HOLDERS
BY AGE AND TYPE OF REGION
1974 - 1984

AGE	REGION	YEAR		
		1983	1984	% Change
15-19 Years	Urban	3 513 (2.3)	2 852 (2.0)	-2.8
	Rural	8 061 (5.2)	7 383 (5.2)	-2.3
20-24 Years	Urban	8 756 (5.6)	6 924 (4.8)	-2.6
	Rural	12 946 (8.3)	11 253 (7.9)	-0.3
25-34 Years	Urban	22 346 (14.4)	19 963 (13.9)	-0.6
	Rural	29 549 (19.0)	28 107 (19.6)	+5.6
35-44 Years	Urban	13 766 (8.9)	12 732 (8.9)	-0.7
	Rural	19 978 (12.9)	19 523 (13.6)	+3.6
45-54 Years	Urban	8 175 (5.3)	7 447 (5.2)	-1.1
	Rural	11 392 (7.3)	11 081 (7.7)	+0.7
55-64 Years	Urban	4 368 (2.8)	4 057 (2.8)	+0.1
	Rural	6 773 (4.4)	6 547 (4.6)	+0.5
65 Years and older	Urban	1 716 (1.1)	1 623 (1.1)	-0.2
	Rural	3 965 (2.6)	3 806 (2.7)	+0.3
TOTAL		155 304 (100.0)	143 298 (100.0)	

TABLE F

NUMBER AND PERCENTAGE OF ALBERTA CERTIFICATE HOLDERS BY TYPE
1974 - 1984

RESIDENCE	1974	1975	1976	1977	1978	1979
Alberta Residents	112 120 (92.7)	116 203 (93.4)	127 506 (93.2)	141 773 (94.2)	148 721 (94.7)	152 744 (94.6)
Non-residents	5 307 (4.4)	5 565 (4.5)	5 899 (4.3)	5 963 (4.0)	5 590 (3.6)	5 727 (3.5)
British Columbia	3 971 (3.3)	4 060 (3.3)	4 261 (3.1)	4 252 (2.8)	3 821 (2.4)	3 835 (2.4)
Prairie Provinces	592 (0.5)	718 (0.6)	817 (0.6)	848 (0.6)	875 (0.6)	899 (0.6)
Central Canada	537 (0.4)	523 (0.4)	544 (0.4)	557 (0.4)	601 (0.4)	727 (0.5)
Atlantic Provinces	32 (0.0)	39 (0.0)	36 (0.0)	44 (0.0)	83 (0.1)	81 (0.1)
Territories	175 (0.1)	225 (0.2)	241 (0.2)	262 (0.2)	210 (0.1)	185 (0.1)
Non-resident Aliens	3 535 (2.9)	2 597 (2.1)	3 372 (2.5)	2 791 (1.8)	2 744 (1.7)	2 985 (1.9)
United States	3 466 (2.9)	2 516 (2.0)	3 254 (2.4)	2 621 (1.7)	2 571 (1.6)	2 727 (1.7)
Other Countries	69 (0.1)	81 (0.1)	118 (0.1)	170 (0.1)	173 (0.1)	258 (0.2)
Total	120 962 (100.0)	124 365 (100.0)	136 777 (100.0)	150 527 (100.0)	157 055 (100.0)	161 456 (100.0)

TABLE F

NUMBER AND PERCENTAGE OF ALBERTA CERTIFICATE HOLDERS BY TYPE
1974 - 1984

RESIDENCE	1980	1981	1982	1983	1984	Average Percentage
Alberta Residents	158 996 (95.5)	158 197 (95.8)	156 349 (96.2)	155 304 (96.1)	143 298 (96.2)	(94.8)
Non-residents	4 452 (2.7)	3 992 (2.4)	3 774 (2.3)	3 770 (2.3)	3 304 (2.2)	(3.3)
British Columbia	3 031 (1.8)	2 661 (1.6)	2 447 (1.5)	2 326 (1.4)	1 966 (1.3)	
Prairie Provinces	662 (0.4)	644 (0.4)	703 (0.4)	678 (0.4)	622 (0.4)	
Central Canada	557 (0.3)	527 (0.3)	443 (0.3)	529 (0.3)	470 (0.3)	
Atlantic Provinces	53 (0.0)	48 (0.0)	38 (0.0)	75 (0.0)	60 (0.0)	
Territories	149 (0.1)	112 (0.1)	143 (0.1)	162 (0.1)	186 (0.1)	
Non-resident Aliens	3 019 (1.8)	2 936 (1.8)	2 440 (1.5)	2 471 (1.6)	2 284 (1.5)	(1.9)
United States	2 734 (1.6)	2 660 (1.6)	2 216 (1.4)	2 306 (1.4)	2 101 (1.4)	
Other Countries	285 (0.2)	276 (0.2)	224 (0.1)	165 (0.1)	183 (0.1)	
Total	166 467 (100.0)	165 125 (100.0)	162 563 (100.0)	161 545 (100.0)	148 886 (100.0)	(100.0)

Contributions of major residence categories are significantly different over time, $p < 0.001$.

TABLE G

NUMBER AND PERCENTAGE OF LICENCE TYPES ISSUED BY SEX
1980 - 1984

LICENCE TYPE	1980		1981		1982		1983		1984	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Bird Game	102 765 (30.8)	3 034 (26.8)	91 612 (26.9)	2 607 (21.3)	85 313 (25.2)	2 138 (18.3)	79 868 (23.7)	1 932 (15.6)	63 773 (20.5)	1 360 (11.5)
General Elk	28 236 (8.5)	674 (5.9)	31 036 (9.1)	843 (6.7)	29 919 (8.9)	790 (6.8)	33 546 (10.0)	924 (7.5)	34 442 (11.1)	909 (7.7)
General Moose	59 651 (17.9)	2 421 (21.4)	62 435 (18.3)	2 750 (22.5)	61 292 (18.1)	2 453 (21.1)	60 946 (18.1)	2 460 (19.9)	51 811 (16.6)	1 843 (15.5)
General Mule Deer	52 507 (15.7)	1 948 (17.2)	56 471 (16.6)	2 198 (18.0)	57 514 (17.0)	2 239 (19.2)	58 241 (17.3)	2 636 (21.4)	53 510 (17.2)	2 648 (22.3)
Gen. White-tailed Deer	63 815 (19.1)	2 665 (23.5)	71 455 (21.0)	3 126 (25.6)	74 043 (21.9)	3 204 (27.5)	73 761 (21.8)	3 440 (27.9)	73 622 (23.6)	3 935 (33.2)
Others	27 019 (8.1)	587 (5.2)	27 295 (8.0)	709 (5.8)	29 870 (8.8)	829 (7.1)	30 605 (9.1)	954 (7.7)	34 417 (11.0)	1 171 (9.9)
Total	333 993 (100.0)	11 329 (100.0)	340 304 (100.0)	12 233 (100.0)	337 951 (100.0)	11 653 (100.0)	336 967 (100.0)	12 346 (100.0)	311 575 (100.0)	11 866 (100.0)
Percentage Males (average = 96.5%)	96.7		96.5		96.7		96.5		96.3	

TABLE H

NUMBER AND PERCENTAGE OF CERTIFICATE HOLDERS BY AGE AND LICENCE TYPE

1980 - 1984

LICENCE TYPE	1980		
	AGE (% OF CERTIFICATE HOLDERS)		
	15 - 24	25 - 54	55 +
Bird Game	32 071 (76.7)	63 259 (62.7)	9 420 (57.7)
Elk	6 284 (15.0)	20 164 (20.0)	2 345 (14.4)
Moose	14 309 (34.2)	41 659 (41.3)	5 803 (35.6)
Mule Deer	14 878 (35.6)	34 756 (34.5)	4 467 (27.4)
White-tailed Deer	18 512 (44.3)	41 798 (41.4)	5 684 (34.8)
Certificate Holders	41 806	100 876	16 314
Total Licence Holders	86 054	201 636	27 719
Licences/Certificate Holder	2.05	2.00	1.70

TABLE H

NUMBER AND PERCENTAGE OF CERTIFICATE HOLDERS BY AGE AND LICENCE TYPE

1980 - 1984

LICENCE TYPE	1981		
	AGE (% OF CERTIFICATE HOLDERS)		
	15 - 24	25 - 54	55 +
Bird Game	26 808 (69.3)	57 923 (56.4)	8 555 (50.9)
Elk	6 542 (16.9)	22 524 (21.9)	2 705 (16.1)
Moose	14 472 (37.4)	44 013 (42.9)	6 397 (38.1)
Mule Deer	15 098 (39.0)	38 151 (37.1)	5 021 (29.9)
White-tailed Deer	19 936 (51.5)	47 498 (46.2)	6 550 (39.0)
Certificate Holders	38 686	102 701	16 810
Total Licence Holders	82 856	210 109	29 228
Licences/Certificate Holder	2.14	2.05	1.74

TABLE H

NUMBER AND PERCENTAGE OF CERTIFICATE HOLDERS BY AGE AND LICENCE TYPE

1980 - 1984

LICENCE TYPE	1982					
	AGE (% OF CERTIFICATE HOLDERS)					
	15 - 24		25 - 54		55 +	
Bird Game	22 669	(63.5)	56 119	(53.7)	8 085	(49.9)
Elk	5 512	(15.4)	22 385	(21.4)	2 743	(16.9)
Moose	13 085	(36.6)	44 291	(42.4)	6 149	(37.9)
Mule Deer	14 365	(40.2)	40 039	(38.3)	5 031	(31.0)
White-tailed Deer	19 488	(54.6)	50 675	(48.5)	6 654	(41.1)
Certificate Holders	35 719		104 421		16 209	
Total Licence Holders	75 119		213 509		28 662	
Licences/Certificate Holder	2.10		2.04		1.77	

TABLE H

NUMBER AND PERCENTAGE OF CERTIFICATE HOLDERS BY AGE AND LICENCE TYPE

1980 - 1984

LICENCE TYPE	1983		
	AGE (% OF CERTIFICATE HOLDERS)		
	15 - 24	25 - 54	55 +
Bird Game	20 074 (60.3)	53 009 (50.4)	7 959 (47.3)
Elk	6 072 (18.2)	25 248 (24.0)	3 075 (18.3)
Moose	12 351 (37.1)	44 525 (42.3)	6 259 (37.2)
Mule Deer	13 886 (41.7)	41 293 (39.2)	5 252 (31.2)
White-tailed Deer	18 737 (56.3)	51 022 (48.5)	6 822 (40.6)
Certificate Holders	33 276	105 206	16 822
Total Licence Holders	71 120	215 097	31 167
Licences/Certificate Holder	2.14	2.04	1.85

TABLE H

NUMBER AND PERCENTAGE OF CERTIFICATE HOLDERS BY AGE AND LICENCE TYPE

1980 - 1984

LICENCE TYPE	1984					
	AGE (% OF CERTIFICATE HOLDERS)					
	15 - 24		25 - 54		55 +	
Bird Game	14 947	(52.6)	43 076	(43.6)	6 520	(40.7)
Elk	5 569	(19.6)	26 324	(26.6)	3 323	(20.7)
Moose	9 560	(33.6)	38 632	(39.1)	5 232	(32.6)
Mule Deer	11 726	(41.3)	38 950	(39.4)	5 056	(31.5)
White-tailed Deer	17 519	(61.7)	52 078	(52.7)	7 273	(45.4)
Certificate Holders	28 412		98 853		16 033	
Total Licence Holders	59 321		199 060		24 658	
Licences/Certificate Holder	2.08		2.01		1.54	

APPENDIX 2

APPENDIX 2-A

NUMBER AND PERCENTAGE OF ALBERTA CERTIFICATE HOLDERS BY AGE GROUP
1974 - 1984

AGE	TYPE	1974		1975		1976	
15-19 Years	Alberta Residents	13 791	(12.3)	14 504	(12.5)	15 480	(12.1)
	Non-residents	232	(4.4)	239	(4.3)	231	(3.9)
	Non-resident Aliens	55	(1.6)	59	(2.3)	68	(2.0)
	All Types	14 078	(11.6)	14 802	(11.9)	15 779	(11.5)
20-24 Years	Alberta Residents	17 581	(15.7)	19 178	(16.5)	21 479	(16.8)
	Non-residents	447	(8.4)	472	(8.5)	526	(8.9)
	Non-resident Aliens	143	(4.0)	123	(4.7)	125	(3.7)
	All Types	18 171	(15.0)	19 773	(15.9)	22 130	(16.2)
25-34 Years	Alberta Residents	13 909	(28.5)	33 233	(28.6)	36 994	(29.0)
	Non-residents	1 211	(22.8)	1 284	(23.1)	1 389	(23.5)
	Non-resident Aliens	574	(16.2)	457	(17.6)	492	(14.6)
	All Types	33 694	(27.9)	34 974	(28.1)	38 875	(28.4)
35-44 Years	Alberta Residents	21 960	(19.6)	22 280	(19.2)	23 977	(18.8)
	Non-residents	1 180	(22.2)	1 166	(21.0)	1 291	(21.9)
	Non-resident Aliens	821	(23.2)	637	(24.5)	696	(20.6)
	All Types	23 961	(19.8)	24 083	(19.4)	25 964	(19.0)
45-54 Years	Alberta Residents	14 962	(13.3)	15 037	(12.9)	16 367	(12.8)
	Non-residents	1 057	(19.9)	1 139	(20.5)	1 153	(19.5)
	Non-resident Aliens	811	(22.9)	675	(26.0)	671	(19.9)
	All Types	16 830	(13.9)	16 851	(13.5)	18 191	(13.3)
55-64 Years	Alberta Residents	7 694	(6.9)	7 807	(6.7)	8 559	(6.7)
	Non-residents	758	(14.3)	764	(13.7)	801	(13.6)
	Non-resident Aliens	559	(15.8)	459	(17.7)	520	(15.4)
	All Types	9 011	(7.4)	9 030	(7.3)	9 880	(7.2)
65 Years and older	Alberta Residents	4 223	(3.8)	4 164	(3.6)	4 650	(3.6)
	Non-residents	422	(8.0)	501	(9.0)	508	(8.6)
	Non-resident Aliens	572	(16.2)	187	(7.2)	800	(23.7)
	All Types	5 217	(4.3)	4 852	(3.9)	5 958	(4.4)
All Ages	Alberta Residents	112 120	(100.0)	116 203	(100.0)	127 506	(100.0)
	Non-residents	5 307	(100.0)	5 565	(100.0)	5 899	(100.0)
	Non-resident Aliens	3 535	(100.0)	2 597	(100.0)	3 372	(100.0)
	All Types	120 962	(100.0)	124 365	(100.0)	136 777	(100.0)

APPENDIX 2-A

NUMBER AND PERCENTAGE OF ALBERTA CERTIFICATE HOLDERS BY AGE GROUP 1974 - 1984

AGE	TYPE	1977	1978	1979
15-19 Years	Alberta Residents	17 355 (12.2)	17 604 (11.8)	16 917 (11.1)
	Non-residents	220 (3.7)	219 (3.9)	225 (3.9)
	Non-resident Aliens	44 (1.6)	57 (2.1)	63 (2.1)
	All Types	17 619 (11.7)	17 880 (11.4)	17 205 (10.7)
20-24 Years	Alberta Residents	23 988 (16.9)	24 174 (16.3)	24 399 (16.0)
	Non-residents	506 (8.5)	532 (9.5)	476 (8.3)
	Non-resident Aliens	118 (4.2)	117 (4.3)	118 (4.0)
	All Types	24 612 (16.3)	24 823 (15.8)	24 993 (15.5)
25-34 Years	Alberta Residents	41 822 (29.5)	44 408 (29.9)	47 362 (31.0)
	Non-residents	1 474 (24.7)	1 292 (23.1)	1 328 (23.2)
	Non-resident Aliens	491 (17.6)	444 (16.2)	506 (17.0)
	All Types	43 787 (29.1)	46 144 (29.4)	49 196 (30.5)
35-44 Years	Alberta Residents	26 419 (18.6)	27 667 (18.6)	28 769 (18.8)
	Non-residents	1 304 (21.9)	1 170 (20.9)	1 195 (20.9)
	Non-resident Aliens	728 (26.1)	699 (25.5)	755 (25.3)
	All Types	31 451 (20.9)	29 536 (18.8)	30 719 (19.0)
45-54 Years	Alberta Residents	17 912 (12.6)	18 675 (12.6)	19 320 (12.6)
	Non-residents	1 143 (19.2)	1 083 (19.4)	1 113 (19.4)
	Non-resident Aliens	681 (24.4)	673 (24.5)	742 (24.9)
	All Types	19 736 (13.1)	20 431 (13.0)	21 175 (13.1)
55-64 Years	Alberta Residents	9 209 (6.5)	9 933 (6.7)	10 316 (6.8)
	Non-residents	785 (13.2)	754 (13.5)	831 (14.5)
	Non-resident Aliens	467 (16.7)	474 (17.3)	499 (16.7)
	All Types	10 461 (6.9)	11 161 (7.1)	11 646 (7.2)
65 Years and older	Alberta Residents	5 068 (3.6)	6 260 (4.2)	5 661 (3.7)
	Non-residents	531 (8.9)	540 (9.7)	559 (9.8)
	Non-resident Aliens	262 (9.4)	280 (10.2)	302 (10.1)
	All Types	5 861 (3.9)	7 080 (4.5)	6 522 (4.0)
All Ages	Alberta Residents	141 773 (100.0)	148 721 (100.0)	152 744 (100.0)
	Non-residents	5 963 (100.0)	5 590 (100.0)	5 727 (100.0)
	Non-resident Aliens	2 791 (100.0)	2 744 (100.0)	2 985 (100.0)
	All Types	150 527 (100.0)	157 055 (100.0)	161 456 (100.0)

APPENDIX 2-A

NUMBER AND PERCENTAGE OF ALBERTA CERTIFICATE HOLDERS BY AGE GROUP
1974 - 1984

AGE	TYPE	1980	1981	1982
15-19 Years	Alberta Residents	16 011 (10.1)	14 357 (9.1)	12 386 (7.9)
	Non-residents	133 (3.0)	114 (2.9)	89 (2.4)
	Non-resident Aliens	52 (1.7)	41 (1.4)	28 (1.1)
	All Types	16 196 (9.7)	14 512 (8.8)	12 503 (7.7)
20-24 Years	Alberta Residents	25 795 (16.2)	24 329 (15.4)	23 333 (14.9)
	Non-residents	311 (7.0)	240 (6.0)	212 (5.6)
	Non-resident Aliens	129 (4.3)	113 (3.8)	83 (3.4)
	All Types	26 235 (15.8)	24 682 (14.9)	23 628 (14.5)
25-34 Years	Alberta Residents	50 295 (31.6)	50 979 (32.2)	51 989 (33.3)
	Non-residents	974 (21.9)	842 (21.1)	785 (20.8)
	Non-resident Aliens	512 (17.0)	450 (15.3)	367 (15.0)
	All Types	51 781 (31.1)	52 271 (31.7)	53 141 (32.7)
35-44 Years	Alberta Residents	30 697 (19.3)	32 014 (20.2)	32 978 (21.1)
	Non-residents	1 015 (22.8)	960 (24.0)	935 (24.8)
	Non-resident Aliens	773 (25.6)	805 (27.4)	664 (27.2)
	All Types	32 485 (19.5)	33 779 (20.5)	34 577 (21.3)
45-54 Years	Alberta Residents	19 884 (12.5)	19 708 (12.5)	19 454 (12.4)
	Non-residents	883 (19.8)	813 (20.4)	719 (19.1)
	Non-resident Aliens	739 (24.5)	703 (23.9)	606 (24.8)
	All Types	21 506 (12.9)	21 224 (12.9)	20 779 (12.8)
55-64 Years	Alberta Residents	10 606 (6.7)	10 671 (6.7)	10 679 (6.8)
	Non-residents	685 (15.4)	635 (15.9)	613 (16.2)
	Non-resident Aliens	506 (16.8)	549 (18.7)	433 (17.7)
	All Types	11 797 (7.1)	11 855 (7.2)	11 725 (7.2)
65 Years and older	Alberta Residents	5 708 (3.6)	6 139 (3.9)	5 530 (3.5)
	Non-residents	451 (10.1)	388 (9.7)	421 (11.2)
	Non-resident Aliens	308 (10.2)	275 (9.4)	259 (10.6)
	All Types	6 467 (3.9)	6 802 (4.1)	6 210 (3.8)
All Ages	Alberta Residents	158 996 (100.0)	158 197 (100.0)	156 349 (100.0)
	Non-residents	4 452 (100.0)	3 992 (100.0)	3 774 (100.0)
	Non-resident Aliens	3 019 (100.0)	2 936 (100.0	2 440 (100.0)
	All Types	166 467 (100.0)	165 125 (100.0)	162 563 (100.0)

APPENDIX 2-A

NUMBER AND PERCENTAGE OF ALBERTA CERTIFICATE HOLDERS BY AGE GROUP 1974 - 1984

AGE	TYPE	1983		1984	
15-19 Years	Alberta Residents	11 574	(7.5)	10 235	(7.1)
	Non-residents	81	(2.1)	62	(1.9)
	Non-resident Aliens	33	(1.3)	17	(0.7)
	All Types	11 688	(7.2)	10 314	(6.9)
20-24 Years	Alberta Residents	21 702	(14.0)	18 177	(12.7)
	Non-residents	213	(5.6)	164	(5.0)
	Non-resident Aliens	68	(2.8)	73	(3.2)
	All Types	21 983	(13.6)	18 414	(12.4)
25-34 Years	Alberta Residents	51 895	(33.4)	48 070	(33.5)
	Non-residents	755	(20.0)	736	(22.3)
	Non-resident Aliens	375	(15.2)	326	(14.3)
	All Types	53 025	(32.8)	49 132	(33.0)
35-44 Years	Alberta Residents	33 744	(21.7)	32 255	(22.5)
	Non-residents	997	(26.4)	834	(25.2)
	Non-resident Aliens	676	(27.4)	626	(27.4)
	All Types	35 417	(21.9)	33 715	(22.6)
45-54 Years	Alberta Residents	19 567	(12.6)	18 528	(12.9)
	Non-residents	697	(18.5)	634	(19.2)
	Non-resident Aliens	577	(23.4)	553	(24.2)
	All Types	20 841	(12.9)	19 715	(13.2)
55-64 Years	Alberta Residents	11 141	(7.2)	10 604	(7.4)
	Non-residents	616	(16.3)	532	(16.1)
	Non-resident Aliens	471	(19.1)	417	(18.3)
	All Types	12 228	(7.6)	11 553	(7.8)
65 Years and older	Alberta Residents	5 681	(3.7)	5 429	(3.8)
	Non-residents	411	(10.9)	342	(10.3)
	Non-resident Aliens	271	(11.0)	272	(11.9)
	All Types	6 363	(3.9)	6 043	(4.1)
All Ages	Alberta Residents	155 304	(100.0)	143 298	(100.0)
	Non-residents	3 770	(100.0)	3 304	(100.0)
	Non-resident Aliens	2 471	(100.0)	2 284	(100.0)
	All Types	161 545	(100.0)	148 886	(100.0)

APPENDIX 2-B

NUMBER AND PERCENTAGE OF FEMALE ALBERTA CERTIFICATE HOLDERS BY AGE GROUP
1974 - 1984

AGE	TYPE	1974	1975	1976
15-19 Years	Alberta Residents	213 (6.1)	205 (5.3)	285 (5.7)
	Non-residents	4 (2.3)	6 (3.7)	4 (2.3)
	Non-resident Aliens	2 (3.8)	0 (0.0)	0 (0.0)
	All Types	219 (5.9)	211 (5.2)	289 (5.6)
20-24 Years	Alberta Residents	638 (18.2)	774 (20.0)	981 (19.8)
	Non-residents	15 (8.7)	10 (6.1)	16 (9.1)
	Non-resident Aliens	4 (7.5)	4 (9.1)	2 (3.1)
	All Types	657 (17.6)	788 (19.3)	999 (19.2)
25-34 Years	Alberta Residents	1 230 (35.0)	1 312 (33.8)	1 723 (34.7)
	Non-residents	41 (23.7)	44 (27.0)	37 (21.1)
	Non-resident Aliens	11 (20.8)	12 (27.3)	16 (24.6)
	All Types	1 282 (34.3)	1 368 (33.5)	1 776 (34.1)
35-44 Years	Alberta Residents	743 (21.1)	833 (21.5)	1 075 (21.6)
	Non-residents	42 (24.3)	43 (26.4)	52 (29.7)
	Non-resident Aliens	6 (11.3)	11 (25.0)	13 (20.0)
	All Types	791 (21.1)	887 (21.7)	1 140 (21.9)
45-54 Years	Alberta Residents	438 (12.5)	506 (13.0)	565 (11.4)
	Non-residents	41 (23.7)	36 (22.1)	43 (24.6)
	Non-resident Aliens	19 (35.8)	6 (13.6)	17 (26.2)
	All Types	498 (13.3)	548 (13.4)	625 (12.0)
55-64 Years	Alberta Residents	193 (5.5)	196 (5.1)	265 (5.3)
	Non-residents	21 (12.1)	20 (12.3)	18 (10.3)
	Non-resident Aliens	9 (17.0)	9 (20.5)	9 (13.8)
	All Types	223 (6.0)	225 (5.5)	292 (5.6)
65 Years and Older	Alberta Residents	59 (1.7)	53 (1.4)	73 (1.5)
	Non-residents	9 (5.2)	4 (2.5)	5 (2.9)
	Non-resident Aliens	2 (3.8)	2 (1.1)	8 (12.3)
	All Types	70 (1.9)	59 (14.4)	86 (1.7)
All Ages	Alberta Residents	3 514 (100.0)	3 879 (100.0)	4 967 (100.0)
	Non-residents	173 (100.0)	163 (100.0)	175 (100.0)
	Non-resident Aliens	53 (100.0)	44 (100.0)	65 (100.0)
	All Types	3 740 (100.0)	4 086 (100.0)	5 207 (100.0)
Female Certificate Holders as Percentage of all Certificate Holders		3 741 (3.1)	4 086 (3.3)	5 207 (3.8)
		120 967 (100.0)	124 365 (100.0)	136 792 (100.0)

APPENDIX 2-B

NUMBER AND PERCENTAGE OF FEMALE ALBERTA CERTIFICATE HOLDERS BY AGE GROUP 1974 - 1984

AGE	TYPE	1977	1978	1979
15-19 Years	Alberta Residents	347 (5.7)	324 (5.4)	351 (5.1)
	Non-residents	2 (1.0)	2 (1.1)	1 (0.6)
	Non-resident Aliens	0 (0.0)	1 (1.4)	2 (2.7)
	All Types	349 (5.5)	327 (5.2)	354 (5.0)
20-24 Years	Alberta Residents	1 168 (19.1)	1 028 (17.2)	1 139 (16.6)
	Non-residents	11 (5.4)	18 (9.6)	14 (8.1)
	Non-resident Aliens	0 (0.0)	3 (4.3)	4 (5.5)
	All Types	1 179 (18.5)	1 049 (16.8)	1 157 (16.3)
25-34 Years	Alberta Residents	2 199 (35.9)	2 226 (37.2)	2 561 (37.4)
	Non-residents	57 (27.8)	45 (23.9)	41 (23.7)
	Non-resident Aliens	12 (20.0)	10 (14.5)	12 (16.4)
	All Types	2 268 (35.5)	2 281 (36.5)	2 614 (36.1)
35-44 Years	Alberta Residents	1 294 (21.1)	1 284 (21.4)	1 493 (21.8)
	Non-residents	59 (28.8)	52 (27.7)	45 (26.0)
	Non-resident Aliens	17 (28.3)	17 (24.6)	25 (34.2)
	All Types	1 370 (21.4)	1 353 (21.7)	1 563 (22.0)
45-54 Years	Alberta Residents	719 (11.7)	678 (11.3)	828 (12.1)
	Non-residents	47 (22.9)	41 (21.8)	39 (22.5)
	Non-resident Aliens	18 (30.0)	18 (26.1)	16 (21.9)
	All Types	784 (12.3)	737 (11.8)	883 (12.4)
55-64 Years	Alberta Residents	307 (5.0)	320 (5.3)	364 (5.3)
	Non-residents	21 (10.2)	24 (12.8)	21 (12.1)
	Non-resident Aliens	7 (11.7)	9 (13.0)	8 (11.0)
	All Types	335 (5.2)	353 (5.7)	393 (5.5)
65 Years and Older	Alberta Residents	91 (1.5)	127 (2.1)	114 (1.7)
	Non-residents	8 (3.9)	6 (3.2)	12 (6.9)
	Non-resident Aliens	6 (10.0)	11 (15.9)	6 (8.2)
	All Types	105 (1.6)	144 (2.3)	132 (1.9)
All Ages	Alberta Residents	6 125 (100.0)	5 987 (100.0)	6 850 (100.0)
	Non-residents	205 (100.0)	188 (100.0)	173 (100.0)
	Non-resident Aliens	60 (100.0)	69 (100.0)	73 (100.0)
	All Types	6 390 (100.0)	6 244 (100.0)	7 096 (100.0)
Female Certificate Holders as Percentage of all Certificate Holders		6 390 (4.2)	6 244 (4.0)	7 096 (4.4)
		150 535 (100.0)	157 074 (100.0)	161 469 (100.0)

APPENDIX 2-B

NUMBER AND PERCENTAGE OF FEMALE ALBERTA CERTIFICATE HOLDERS BY AGE GROUP
1974 - 1984

AGE	TYPE	1980	1981	1982
15-19 Years	Alberta Residents	362 (4.8)	368 (4.5)	295 (3.8)
	Non-residents	1 (0.9)	3 (3.0)	0 (0.0)
	Non-resident Aliens	1 (1.8)	0 (0.0)	0 (0.0)
	All Types	364 (4.7)	371 (4.5)	295 (3.8)
20-24 Years	Alberta Residents	1 200 (16.0)	1 213 (14.9)	1 095 (14.2)
	Non-residents	8 (7.4)	8 (8.1)	6 (6.7)
	Non-resident Aliens	3 (5.5)	6 (9.4)	1 (2.3)
	All Types	1 211 (15.8)	1 227 (14.8)	1 102 (14.1)
25-34 Years	Alberta Residents	2 793 (37.3)	2 967 (36.4)	2 954 (38.3)
	Non-residents	21 (19.4)	22 (22.2)	24 (27.0)
	Non-resident Aliens	14 (25.5)	7 (10.9)	8 (18.2)
	All Types	2 828 (37.0)	2 996 (36.1)	2 986 (38.3)
35-44 Years	Alberta Residents	1 730 (23.1)	1 989 (24.4)	1 895 (24.6)
	Non-residents	30 (27.8)	22 (22.2)	32 (36.0)
	Non-resident Aliens	11 (20.0)	23 (35.9)	17 (38.6)
	All Types	1 771 (23.2)	2 034 (24.5)	1 944 (38.3)
45-54 Years	Alberta Residents	857 (11.5)	1 003 (12.3)	939 (12.2)
	Non-residents	22 (20.4)	23 (23.2)	12 (13.5)
	Non-resident Aliens	9 (16.4)	12 (18.8)	9 (20.5)
	All Types	888 (11.6)	1 038 (12.5)	960 (12.3)
55-64 Years	Alberta Residents	420 (5.6)	448 (5.5)	387 (5.0)
	Non-residents	19 (17.6)	17 (17.2)	10 (11.2)
	Non-resident Aliens	10 (18.2)	11 (17.2)	3 (6.8)
	All Types	449 (5.9)	476 (5.7)	400 (5.1)
65 Years and Older	Alberta Residents	120 (1.6)	153 (1.9)	142 (1.8)
	Non-residents	7 (6.5)	4 (4.0)	5 (5.6)
	Non-resident Aliens	7 (12.7)	5 (7.8)	6 (13.6)
	All Types	134 (1.8)	162 (2.0)	153 (2.0)
All Ages	Alberta Residents	7 482 (100.0)	8 141 (100.0)	7 707 (100.0)
	Non-residents	108 (100.0)	99 (100.0)	89 (100.0)
	Non-resident Aliens	55 (100.0)	64 (100.0)	44 (100.0)
	All Types	7 646 (100.0)	8 304 (100.0)	7 804 (100.0)
Female Certificate Holders as Percentage of all Certificate Holders		7 646 (4.6)	8 304 (5.0)	7 804 (4.8)
		166 469 (100.0)	165 125 (100.0)	162 563 (100.0)

APPENDIX 2-B

NUMBER AND PERCENTAGE OF FEMALE ALBERTA CERTIFICATE HOLDERS BY AGE GROUP 1974 - 1984

AGE	TYPE	1983	1984
15-19 Years	Alberta Residents	329 (4.0)	340 (4.1)
	Non-residents	1 (1.1)	1 (1.4)
	Non-resident Aliens	0 (0.0)	1 (2.4)
	All Types	330 (4.0)	342 (4.0)
20-24 Years	Alberta Residents	1 093 (13.4)	978 (11.7)
	Non-residents	3 (3.2)	2 (2.8)
	Non-resident Aliens	2 (3.5)	1 (2.4)
	All Types	1 098 (13.2)	981 (11.6)
25-34 Years	Alberta Residents	3 240 (39.6)	3 200 (38.3)
	Non-residents	21 (22.6)	23 (31.9)
	Non-resident Aliens	11 (19.3)	7 (16.7)
	All Types	3 272 (39.2)	3 230 (38.2)
35-44 Years	Alberta Residents	2 005 (24.5)	2 191 (26.2)
	Non-residents	40 (43.0)	22 (30.6)
	Non-resident Aliens	24 (42.1)	10 (23.8)
	All Types	2 069 (24.8)	2 223 (26.3)
45-54 Years	Alberta Residents	990 (12.1)	1 062 (12.7)
	Non-residents	15 (16.1)	15 (20.8)
	Non-resident Aliens	9 (15.8)	11 (26.2)
	All Types	1 014 (12.2)	1 088 (12.9)
55-64 Years	Alberta Residents	391 (4.8)	431 (5.2)
	Non-residents	9 (9.7)	6 (8.3)
	Non-resident Aliens	5 (8.8)	7 (16.7)
	All Types	405 (4.9)	444 (5.2)
65 Years and Older	Alberta Residents	139 (1.7)	145 (1.7)
	Non-residents	4 (4.3)	3 (4.2)
	Non-resident Aliens	6 (10.5)	5 (11.9)
	All Types	149 (1.8)	153 (1.8)
All Ages	Alberta Residents	8 187 (100.0)	8 347 (100.0)
	Non-residents	93 (100.0)	72 (100.0)
	Non-resident Aliens	57 (100.0)	42 (100.0)
	All Types	8 337 (100.0)	8 461 (100.0)
Female Certificate Holders as Percentage of all Certificate Holders		8 337 (5.2)	8 461 (5.7)
		161 552 (100.0)	148 890 (100.0)

APPENDIX 3

A. URBAN COMPONENTS OF THE ALBERTA POPULATION

The definitions of urban and rural areas are diverse. For example, Statistics Canada considers any population centre containing 1 000 or more people at a density of 400 or more people per square kilometre as an urban area. This definition was thought to be unacceptable for the purposes of this report. We chose the four largest metropolitan areas (see below) as the urban component of the provincial population because hunting areas are not readily accessible to residents of these areas. In addition, these metropolitan areas are distinguished on the Fish and Wildlife Certificate-Licencing System. The table below outlines the major population components of these centers. The second table outlines centers which are not considered as urban areas.

Residence Code	Centre	Population (1981)
1	Devon	3 885
	Edmonton CMA[1]	657 057
	Ft. Saskatchewan	12 169
	St. Albert	31 996
2	Penhold	1 531
	Red Deer	46 393
3	Calgary CMA	592 743
4	Lethbridge	54 072

Note: 1. Edmonton Census Metropolitan Area includes Sherwood Park.

B. POPULATION CENTRES NOT CONSIDERED AS URBAN AREAS

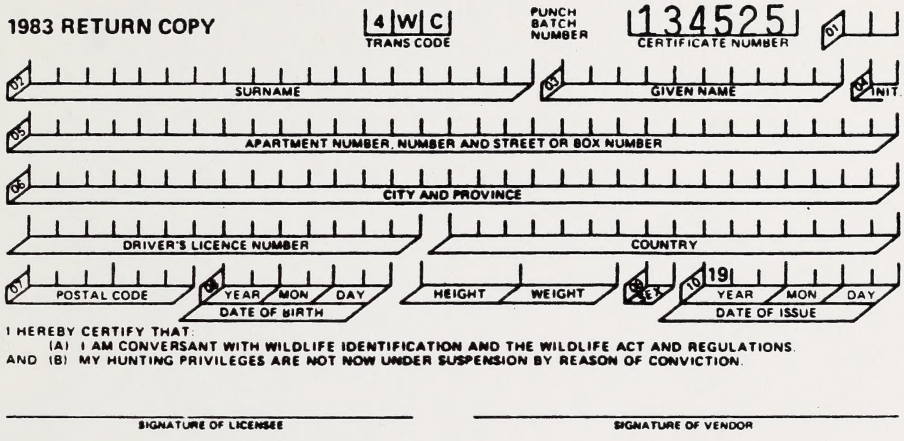
Residence Code	Centre	Population (1981)
5	Crowsnest Pass	7 306
	Medicine Hat	40 380
	Taber	5 988
6	Airdrie	8 414
	Camrose	12 570
	Drumheller	6 508
	Innisfail	5 247
	Lacombe	5 591
	Leduc	12 471
	Ponoka	5 221
	Stettler	5 136
	Wetaskiwin	9 597
7	Lloydminster	8 997
	Vegreville	5 251
8	Edson	5 835
	Hinton	8 342
	Spruce Grove	10 326
	Whitecourt	5 585

B. POPULATION CENTRES NOT CONSIDERED AS URBAN AREAS (CONT'D)

Residence Code	Centre	Population(1981)
9	Grande Prairie	24 263
	Peace River	5 907
10	Fort McMurray	31 000

Note: 1. Only centres with a population of 5 000 or more in 1981 are listed.

C. COPY OF A CERTIFICATE RECORD



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